GUIDELINES FOR AUTHOR PREPARATION OF REPORTS

WILL HELP YOU AVOID THIS!!

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http://larcpubs.larc.nasa.gov/guidelines/

Any templates downloaded prior to April 10, 1998 are obsolete.

Designed by:

Media Concepts Team

Introduction

NASA STI Report Series

Author/TEC Responsibilities

Submittal Information

Price Codes/ Subject Categories

Stylistic Elements

Producing An Electronic Document

Creating PostScript Files

Templates

Samples

Feedback Form

IMB & DAIB Publication Services

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Introduction

Langley technical reports have typically undergone substantive editing and professional formatting as part of the document preparation process. Because staffing resources have declined and desktop publishing software has become easier to use, authors may now produce their own technical reports. However, the Data Analysis and Imaging Branch (DAIB) will continue to provide editing and formatting services upon request of the author or Technical Editing Committee (TEC). The TEC may require that a Technical Publication (TP) receive editing or formatting services from DAIB. Editing and formatting by DAIB will be required for most Special Publications (SPs). The author will ultimately be responsible for ensuring that author-produced reports comply with the standards presented in these guidelines.

The guidelines presented herein are intended to facilitate the production of coherent, professional-looking technical reports. They are equally useful for authors who intend to use the technical editing or formatting services of the DAIB.Taking advantage of the following guidelines can increase the speed of report production while maintaining the quality of reports. However, if editing or formatting services will be requested for a technical report, please submit the report in a single-column, double-spaced format with tables and figures at the back of the report.

Guidelines for formatting through the use of predeveloped templates are included for FrameMaker and Microsoft Word software packages. Although information is presented for Microsoft Word word processing software, this software was not designed for multiple step desktop publishing of documents that include complex mathematical equations and symbols and integrated figures. Therefore, reports created with this package may require additional steps as the report progresses through document production. LaTeX templates are available courtesy of the Aerothermodynamics Branch, AGDD. (LaTeX is not supported by the Data Analysis and Imaging Branch.)

The following information outlines the minimum quality standards acceptable for Langley technical reports, defines who is responsible for ensuring these standards are met, and offers guidance for specific situations to achieve compliance with the standards. The formatting and graphics information is based on experience in successfully creating electronic documents for printing and electronic dissemination. If you are using applications that are not discussed, you may have to experiment with file formats to create a document that can be successfully printed and also posted to the Langley Technical Report Server (LTRS). If you need additional guidance about or are having trouble using the FrameMaker templates, contact Peggy Overbey, or contact Harriet Machie if you need assistance with the Microsoft Word templates. For questions about stylistic issues or editorial concerns contact Gail McQuigg. For more information about figure file preparation contact Dee Bullock. For questions about references contact Cathy Everett.

NASA STI Report Series

NASA STI Report Series

NASA STI Report Series

A brief description of the report types included in the NASA Scientific and Technical Information (STI) report series is shown below.See the "STI Report Series Table" for a list of the types of NASA STI publications, the related STI report series, and the suggested distribution. Publications in the STI report series may receive either standard or nonstandard distribution as deemed appropriate by the author. More information on the STI report series is available in NPG 2200.2A, *Guidelines for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information*.

Technical Publication (TP)

This series comprises reports of completed research or a major significant phase of research that presents the results of NASA programs and includes extensive data or theoretical analysis. Included in this series are compilations of significant scientific and technical data and information deemed to be of continuing reference value. TP's are the NASA counterpart to peer-reviewed formal professional papers but have less stringent limitations on manuscript length and extent of graphic presentations.

Technical Memorandum (TM)

This series records scientific and technical findings that are preliminary or of specialized interest, e.g., quick release reports, working papers, and bibliographies that contain minimal annotation. TM's do not contain extensive analysis.

Contractor Report (CR)

This series comprises reports of scientific and technical findings by NASA-sponsored contractors and grantees.

Conference Publication (CP)

This series contains collected papers from scientific and technical conferences, symposia, seminars, or other meetings sponsored or co-sponsored by NASA.

Special Publication (SP)

This series records scientific, technical, or historical information from NASA programs, projects, and missions, often concerned with subjects having substantial public interest.

Technical Translation (TT)

This series consists of English-language translations of foreign scientific and technical material pertinent to NASA's misison.

Table A3-1. Types of NASA Publications, Related STI Report Series, and Suggested Distribution (See also next page.)

(From NPG 2200.2A, "Guidelines for Documentation, Approval, and Dissimination of NASA Scientific and Technical Information)

NASA STI Report Series

Manuscript Contents	Appropriate Series	Appropriate Initial Distribution (see also paragraph 5.6)
Article for a professional journal	None required; TP for expanded treatment and TM for preprint	Two copies to CASI (fifteen if the article contains color or is a page size other than 8-1/2 by 11 inches)
Article for a technical magazine	None required; TP for expanded treatment and TM for preprint	Two copies to CASI (fifteen if the article contains color or is a page size other than 8-1/2 by 11 inches)
Atlas of scientific imagery	TP or SP	Standard
Bibliography: Continuing Extensive annotation Minimal annotation	 SP TP TM	 Standard Standard Standard or Nonstandard
Contractor or grantee results and findings	CR, TP, or SP	Standard or Nonstandard
Critical review of the literature	TP	Standard
Critical tables	TP	Standard
Data compilation: Extensive use Limited use	 TP TM	 Standard Nonstandard
Design standards	TP	Standard
Dissertation or thesis by employee, relating to work	TM	Standard or Nonstandard
Engineering report	TP	Standard
Handbook	TP	Standard
History	SP	Standard
Letter (e.g., for a professional journal)	None required	Two copies to CASI (fifteen if the article contains color or is a page size other than 8-1/2 by 11 inches)
Limited distribution report	TP or TM	Standard or Nonstandard
Literature survey, review	TP	Standard
Management Report	SP (6000 series)	Nonstandard
Manual	TP or TM	Standard or Nonstandard
Monograph	TP	Standard
Preliminary results report	TM	Nonstandard
Preprint of paper for a professional meeting	TM	Standard or Nonstandard
Proceedings of a workshop, conference, seminar, etc.	CP	Standard
Program description or summary	SP	Standard
Report to another agency	TM	Standard or Nonstandard
Research report	TP	Standard
Review paper	TP	Standard
Security-classified report	TP or TM	Two copies of the unclassified RDP to CASI
Sponsored research report: NASA sponsor Non-NASA sponsor	 CR TM	Standard or Nonstandard Standard or Nonstandard
State-of-the-art review	TP	Standard
Technical report—complete, comprehensive	TP	Standard
Textbook, scientific or technical	TP	Standard
Translation	TT	Two copies to CASI (fifteen if the article contains color or is a page size other than 8-1/2 by 11 inches)
Working paper (external circulation)	TM	Nonstandard

Author/TEC Responsibilities

Updated Information

- April 10, 1998
  A section describing the levels of edit available from DAIB has been added.

Responsibilities of Author

The author is ultimately responsible for ensuring that the finished report complies with all the standards presented in these guidelines. The compliance of Technical Publications (TP's) with these standards will be ensured through the oversight of the Technical Editing Committee (TEC).

Any report that the author sends to the Research Information Management (RIM) Office must comply with the following minimum specifications. For further information about creating PostScript files with FrameMaker or Microsoft Word software, click on the appropriate link. See "Guidelines for Electronic Graphics" for more information about creating electronic files for figures. The report will be returned to the author if any of these specifications are not met.

- The report must be complete and printable on the DocuTech system (or with the alternative method selected by the printing specialist).
- The electronic copy must be in the form of PostScript files that can be directly sent to and printed on the DocuTech system.
- These files must also be capable of being posted to LTRS without modification by RIM.
- All figures and photographs must be properly sized, composed, and arranged to produce readable, economical printed copies of the report.
- Pages must be correctly numbered.

Responsibilities of Technical Editing Committee

The Technical Editing Committee (TEC) is responsible for ensuring that a Technical Publication (TP) produced at Langley meets technical and editorial standards and is thus suitable for publication by NASA. While reviewing the report, the TEC should keep in mind that they are conducting the final critical evaluation of the technical content and the quality of information. It is therefore critical that the TEC be thorough and conscientious in its evaluation. See "Checklist for Technical Editing Committee." The TEC shall ensure that a Technical Publication complies with the following minimum standards.

1. The report is written clearly and will be comprehensible to the intended audience and the information presented meets the technical standards of the discipline.
2. The tense usage is logical and consistent and the report is well organized, with headings that conform to the proper style.
3. All numbered or lettered items (tables, figures, equations, references, and appendixes) are introduced in the text in correct order. Ensure that the numbering is sequential and that any cross-references are correct.
4. Any reference to an item within the report is accurate (e.g., if the text refers to figure 1, ensure that figure 1 is the appropriate figure).
5. There are no incorrectly or inconsistently spelled words and no obvious grammar or punctuation errors.
6. There are no endorsements of or improper references to commercial or trademarked products. Improper references include inaccurately named products, product name used as noun instead of as adjective, or commercial product named where generic name is available.
7. There are no statements that will embarrass NASA or the Federal Government.
8. Any conclusions presented are supported by the text.
9. References cited are available and the reference list contains sufficient information to allow the reader to obtain the correct document. For references cited by author and date, ensure that text citations are accurate and sufficient to identify the correct reference.
10. Graphic and tabular data are clearly presented; data presented in more than one location in the report are consistent.
11. Report complies with current policies and procedures for restricted, proprietary, or classified information. In addition, no restricted, proprietary, or classified information is included in a report without appropriate restrictions; that is, if an otherwise unclassified report incorporates classified data from another report, then the report must be given the same classification as the referenced report.

Author/TEC Responsibilities

If the TEC determines that the report is technically sound but contains more grammar, clarity, or formatting errors than can be reasonably corrected by the TEC, then the report should be forwarded to the Data Analysis & Imaging Branch, ISSD for professional editing and formatting.

Checklist for Technical Editing Committee

_____ Report is written clearly.

_____ All numbered or lettered items (figures, tables, equations, references, and appendixes) are introduced in correct order.

_____ All numbered or lettered items are numbered or lettered correctly and referred to accurately.

_____ No incorrectly or inconsistently spelled words; no obvious grammar or punctuation errors.

_____ No endorsements of or improper references to commercial or trademarked products.

_____ No statements that will embarrass NASA or the Federal Government.

_____ Any conclusions presented are supported by the text.

_____ References cited are available with sufficient information to identify correct document.

_____ Graphic and tabular data are clearly presented and are consistent.

_____ Report complies with policies for restricted, proprietary, or classified information.

Levels of Edit

The Media Services Center of DAIB offers three levels of edit for all documents, whether published on paper or electronically. The level of edit should be chosen based on the document and the intended audience. A formal document with a wide audience may require a substantive edit, a document being prepared for a committee review may require a mid-level edit, while a less formal document intended for a small audience may require a minimum edit. Technical Reports (TP's) may receive a substantive edit at the request of either the author or the technical editing committee (TEC). All Special Publications (SP's) receive a substantive edit.

For questions about levels of edit, contact Gail McQuigg.

For your convenience, you may print, indicate level of edit, and attach this page to your report.

The following describes the services included in each level of edit.

_____ **Minimum Edit**

- Ensures correct grammar, punctuation, and spelling.
- Ensures that figures, tables, references, and appendixes are numbered in correct order.
- Ensures sections of document are in correct order.
- Ensures proper use of disclaimers and acknowledgments.
- Ensures that NASA policy regarding use of copyrighted material, trademarks, tradenames, and product and company names is followed.
- Ensures that NASA policy regarding inappropriate statements is followed.

_____ **Mid-Level Edit**

Includes all elements of minimum edit and the following:

- Ensures consistent use of spelling, capitalization, acronyms, hyphenation, abbreviations, symbols, and terminology.
- Ensures format of references.
- Ensures that information in figures and tables are in agreement with text.
- Ensures that table design presents information advantageously.
- Ensures that sections, tables, figures, references, and appendixes mentioned in text are included in document.

- Examines equations.
- Provides coordination of technical illustration and typesetting services.
- Provides coordination of formatting to NASA or journal guidelines.

Author/TEC Responsibilities

Substantive Edit

Includes all elements of minimum and mid-level edits and the following:

- Evaluates document to strengthen unity, coherence, organization, conciseness, and consistency in meaning and removal of needless redundancies.
- Ensures completeness of reference information.
- Coordinates written authorization of color printing for color figures.

Submittal Information

Updated Information

- April 10, 1998
  Langley Form 99 availability information and report submission requirements added to "Submittal of Reports" section.

Submittal of Reports

At Langley, all reports for publication are processed through Research Information Management (RIM), Information Management Branch (IMB), Information Systems and Services Division (ISSD). NASA report series numbers are not issued until a report is ready for publication, however; an internal tracking or L-number is assigned during the initial stages of report production.

Langley Form 99, "Technical Publication Approval Form," is required for all publication submittals. Form 99 may be completed electronically by using the Informed Manager application on the Macintosh. Form 99 is available in PostScript and PDF formats for viewing, printing, and completing manually at http://www-imforms.larc.nasa.gov/ or by selecting the "IMB & DAIB Publication Services" button on the main menu of this site.

Submittal Information

All reports submitted in final form for publication must include the following: Langley Form 99, Cover including NASA STI Profile page, Title Page including report availability page, main report, and Report Documentation Page.

Additional information and internal tracking or L-numbers may be obtained by contacting Susan Stewart, Harriet Machie, or Cindy Sadler.

The NASA STI report series is comprised of the following publications (see "NASA STI Report Series" for more information):

- Technical Publication (TP)
- Technical Memorandum (TM)
- Contractor Report (CR)
- Conference Publication (CP)
- Special Publication (SP)
- Technical Translation (TT)

Technical Publication (TP) Submittal

Editing and formatting of TP's may be performed by the author. The Technical Editing Committee (TEC) determines whether the report meets technical and editorial standards. The Data Analysis and Imaging Branch (DAIB), Information Systems and Services Division (ISSD), will perform editing, formatting, or create a PostScript file at the request of either the author or the TEC.

The following are the steps for submitting a TP for publication:

- Prepare draft copy of report. See either "Preparing Reports With FrameMaker v5.0.1 Templates" or "Preparing Reports With Microsoft Word v6.0.1 Templates."
- Complete Langley Form 99 "Technical Publication Approval Form."

- Set up TEC and distribute copies of report to TEC members. Langley Form 51 "Technical Editing Committee Membership Selection Notice" may be used for selection of members from other divisions.
- Forward Form 99 and report to author's branch head.
- The TEC reviews the report. (See "Responsibilities of Technical Editing Committee" and "Checklist for Technical Editing Committee".)
- Revise report (See "Responsibilities of the Author".)
- Prepare cover, title page, and Report Documentation Page (RDP), Standard Form 298. Use Microsoft Word, FrameMaker, or LaTex templates and save all files.
- Update Form 99, if necessary, with TEC members, distribution, and electronic file information.
- Forward Form 99, cover, title page, RDP, and a one-sided paper copy of revised report in final format through approval routing on Form 99. (If editing and manuscript preparation are to be completed by DAIB forward a double-spaced, single-column paper copy of text with figures and tables at the back of the text. Integration of figures and tables can be done during manuscript preparation by DAIB.)
- If editing and formatting were completed by author, save electronic files for report, cover, title page, and RDP in PostScript format for printing and posting of publicly available reports on the Langley Technical Report Server (LTRS). (See "Creating a PostScript File to Submit the Document for Printing for FrameMaker", "Creating a PostScript File With Microsoft Word for Macintosh", or "Creating a PostScript File With Microsoft Word 97 for PC".)

Submittal Information

When electronic files are needed, RIM will contact the author for the PostScript files of camera-ready reports and DAIB will contact the author for the electronic source files of rough draft reports. Note, electronic copy and paper copy must be exactly the same version of the report.

Technical Memorandum (TM) Submittal

The following are the steps for submitting a Technical Memorandum:

- Prepare single-sided camera-ready copy of report. (Author may request editing, formatting, or PostScript file creation from the Data Analysis and Imaging Branch, ISSD.)
- Complete Langley Form 99 "Technical Publication Approval Form."
- Prepare cover, title page, and Report Documentation Page (RDP), Standard Form 298. See either "Preparing Reports With FrameMaker v5.0.1 Templates" or "Preparing Reports With Microsoft Word v6.0.1 Templates." Save all files.

- Forward Form 99, cover, title page, camera-ready copy of report, and RDP through approval routing on Form 99.
- Save electronic files of report, cover, title page, and RDP in PostScript format for printing and posting of publicly available reports on LTRS. (See "Creating a PostScript File to Submit the Document for Printing for FrameMaker", "Creating a PostScript File With Microsoft Word for Macintosh", or "Creating a PostScript File With Microsoft Word 97 for PC".)

RIM will contact the author for the PostScript files for the report, cover, title page, and RDP when needed. Note, electronic copy and paper copy must be exactly the same version of the report.

Contractor Report (CR) Submittal

The following are the steps for submitting a Contractor Report:

- Obtain single-sided camera-ready copy of revised report and a PostScript file, if available, from contractor.
- Complete Langley Form 99 "Technical Publication Approval Form."
- Prepare cover, title page, and Report Documentation Page (RDP), Standard Form 298. See either "Preparing Reports With FrameMaker v5.0.1 Templates" or "Preparing Reports With Microsoft Word v6.0.1 Templates." Save all files.
- Forward Form 99, cover, title page, camera-ready report, and RDP through approval routing on Form 99.
- If a PostScript file is available for report, save electronic source files for cover, title page, and RDP in PostScript format for printing and posting of publicly available reports on LTRS. (See "Creating a PostScript File to Submit the Document for Printing for FrameMaker", "Creating a PostScript File With Microsoft Word for Macintosh", or "Creating a PostScript File With Microsoft Word 97 for PC".)

RIM will contact the technical monitor for the PostScript files when needed. Note, electronic copy and paper copy must be exactly the same version of the report.

Conference Publication (CP) Submittal

Reports exceeding 600 pages must be divided into parts with each part containing the Preface or Foreword, Table of Contents, cover, title page, and RDP. Conference coordinators must perform or obtain any editing, correcting, or compiling of papers. The Data Analysis and Imaging Branch, ISSD, will provide assistance with page layout and page numbering at the request of the Conference Coordinator.

The following are the steps for submitting a Conference Publication:

- Prepare single-sided camera-ready copy of report. (Conference coordinators must perform or obtain any editing, correcting, compiling of papers, and page numbering.)
- Prepare Preface or Foreword and Table of Contents.
- Complete Langley Form 99 "Technical Publication Approval Form."
- Prepare cover, title page, and Report Documentation Page (RDP), Standard Form 298. See either "Preparing Reports With FrameMaker v5.0.1 Templates" or "Preparing Reports With Microsoft Word v6.0.1 Templates." Save all files.
- Forward Form 99, cover, title page, camera-ready report, and RDP through approval routing on Form 99.
- If report was compiled electronically, save files for report, cover, title page, and RDP in PostScript format. (See "Creating a PostScript File to Submit the Document for Printing for FrameMaker", "Creating a PostScript File With Microsoft Word for Macintosh", or "Creating a PostScript File With Microsoft Word 97 for PC".)

Special Publication (SP) and Technical Translation (TT)

Contact Gail McQuigg of the Data Analysis and Imaging Branch for information on preparation of these publications or Susan Stewart of the Information Management Branch for submittal information.

Price Code Schedule and Subject Category Listing

Price Codes/
Subject Categories

Price Code Schedule

Include the price code in Block 16 of the Report Documentation Page for all publicly available reports submitted for publication. The price code is based on the number of pages in the document. Count all pages containing text or graphic material including the cover (2 pages), title page (2 pages), and Report Documentation Page (1 page). (DO NOT COUNT BLANK PAGES.)

Price Codes/
Subject Categories

Page Range	Price Code
1-10	A02
11-50	A03
51-75	A04
76-100	A05
101-125	A06
126-150	A07
151-175	A08
176-200	A09
201-225	A10
226-250	A11
251-275	A12
276-300	A13
301-325	A14
326-350	A15
351-375	A16
376-400	A17
401-425	A18
426-450	A19
451-475	A20
476-500	A21
501-525	A22
526-550	A23
551-575	A24
576-600	A25
601 & Up	A99

Subject Categories

(Used in Scientific and Technical Aerospace Reports (STAR))

Aeronautics

Includes aeronautics (general); aerodynamics; air transportation and safety; aircraft communications and navigation; aircraft design, testing and performance; aircraft instrumentation; aircraft propulsion and power; aircraft stability and control; and research and support facilities (air).

01 Aeronautics (GENERAL)

02 Aerodynamics

- **Aerodynamic Characteristics**
  Lift, drag, stability, control, and balance; dynamic properties.
- **Aerodynamics of Bodies**
  Aerodynamics of cylindrical, conical, rotating, lifting, and symmetrical bodies; aerodynamic configurations.
- **Airfoil and Wing Aerodynamics**
  Aerodynamics of wings and airfoil shapes and forms; supercritical wings.

03 Air Transportation and Safety

- **Commercial and General Aviation**
  Design, operation, and maintenance of commerical and general aviation aircraft; air traffic control and safety factors.
- **Helicopters and Ground Effect Machines**
  Design, performance, and control of helicopters, hovercraft, and ground effect machines; rotor aerodynamics.
- **STOL/VTOL Aircraft**
  Design and stability control of short takeoff and landing aircraft and vertical takeoff and landing aircraft; aircraft configurations.
- **Supersonic Transport**
  Research and concepts in supersonic, transonic, and hypersonic transports; Concorde aircraft; aerospace planes.
- **Aircraft Noise and Sonic Boom**
  Effects and measurement of sound intensity of aircraft and sonic booms; noise prediction and reduction.
- **Aircraft Safety and Safety Devices**
  Aircraft safety studies; accident investigation; air piracy; safety techniques and safety devices.

Price Codes/
Subject Categories

- **Clear Air Turbulence**
  Atmospheric turbulence, diffusion, and counterflow; wind shear and microbursts.

04 Aircraft Communications and Navigation

Digital and voice communication with aircraft; air navigation systems (satellite and ground based); and air traffic control.

05 Aircraft Design, Testing, and Performance

- **Hydraulic and Pneumatic Systems**
  Hydraulic and pneumatic equipment and instrumentation; component reliability; hydraulic test tunnels.
- **Auxiliary Electrical Systems**
  Electrical and solar auxiliary power sources; performance tests and system analysis; reliability engineering.

Price Codes/ Subject Categories

06 Aircraft Instrumentation

Cockpit and cabin display devices; and flight instruments.

07 Aircraft Propulsion and Power

- **Jet Propulsion**
  Propulsion system performance and configurations of turbojet, pulsejet, and ramjet aircraft engines; combustion physics.

08 Aircraft Stability and Control

Aircraft handling qualities; piloting; flight controls; and autopilots.

09 Research and Support Facilities (Air)

- **Wind Tunnels**
  Wind tunnel and shock tube installations, test programs, and technology.

Astronautics

Includes astronautics (general); astrodynamics; ground support systems and facilities (space); launch vehicles and space vehicles; space transportation; space communications, spacecraft communications, command and tracking; spacecraft design, testing and performance; spacecraft instrumentation; and spacecraft propulsion and power.

12 Astronautics (GENERAL)

13 Astrodynamics

- **Celestial Mechanics and Orbital Calculations**
  Orbital calculations for celestial mechanics and spacecraft trajectories; applications of mathematics; space mechanisms.

14 Ground Support Systems and Facilities (Space)

- **Spacecraft Ground Support**
  Spacecraft launch facilities and ground operational support systems; network control; logistics.
- **Test Facilities**
  Rocket test facilities; test ranges and stands; reactor test facilities; engine test facilities.
- **Simulators and Simulation**
  Solar, space, and environment simulators; vacuum chambers; simulation programs, methods, and technology.
- **Sterilization**
  Spacecraft sterilization and contamination control; methods and effects; planetary quarantine.

15 Launch Vehicles and Space Vehicles

Price Codes/
Subject Categories

- **Launch Vehicles**
  Large, medium, recoverable, and reusable launch vehicles; spacecraft launching; launch vehicle configurations.
- **Sounding Rockets**
  Meteorological observations from the upper atmosphere by radiosondes; rocket-borne instruments; atmosphericphysics.
- **Space Probes**
  Lunar and interplanetary deep space probes; unmanned, maneuverable spacecraft.
- **Scientific Satellites**
  Geophysical, astronomical, and environmental satellites; orbiting observatories; IRAS; SMM; LANDSAT; Explorer satellites.
- **Reentry Vehicles**
  Maneuverable and lifting reentry bodies entering planetary atmospheres; instrumentation; atmospheric entry simulation.
- **U.S.S.R. Spacecraft**
  Manned and unmanned Soviet spacecraft and space programs; Soviet satellites.

16 Space Transportation

- **Space Transportation and Manned Spacecraft**
  All manned space vehicles; space shuttles; Apollo; Skylab; Spacelab; Apollo-Soyuz Test Program; orbiting laboratories and manned flights.

17 Space Communications, Spacecraft Communications, Command and Tracking

- **Space Communications**
  Reentry, lunar, interplanetary, satellite, and spacecraft communications, excluding communication satellites.
- **Navigation Systems**
  Spacecraft and aircraft navigation systems including star trackers, inertial systems, doppler and stellar navigation; navigation instruments.
- **Guidance Systems**
  Inertial, midcourse, and reeentry guidance and control of spacecraft; instrumentation; space navigation.
- **Tracking**
  Tracking installations, personnel, and equipment; systems using radio, radar, infrared, or optical techniques.

Price Codes/ Subject Categories

18 Spacecraft Design, Testing, and Performance

- **Spacecraft Attitude Control and Stabilization**
  Attitude and stability control of spacecraft; performance tests; systems stability.
- **Rendezvous and Docking**
  Rendezvous guidance; trajectories; docking of spacecraft; orbital mechanics.
- **Space Stations**
  Functions of and systems for a space station; analysis; control; maintenance; human factors engineering.

19 Spacecraft Instrumentation

- **Spacecraft Instrumentation**
  Spacecraft and aircraft instruments, gauges, indicators, systems.
- **Sensors and Transducers**
  Sensing instruments used for measuring pressure, temperature, and acoustics in space vehicles and aircraft.

20 Spacecraft Propulsion and Power

- **Rocket Engines, Nozzles and Thrust Chambers**
  Design, materials, and performance tests of rocket engines, nozzles, and thrust chambers; thrust measurement.
- **Auxiliary Propulsion**
  Spacecraft propulsion systems excluding main propulsion systems; auxiliary power sources; propulsion System performance.

- **Electric Propulsion**
  Electromagnetic and electrostatic propulsion; laser, plasma, and ion propulsion; nuclear electric propulsion.

Chemistry and Materials

Includes chemistry and materials (general); composite materials; inorganic and physical chemistry; metallic materials; nonmetallic materials; propellants and fuels; and materials processing.

23 Chemistry and Materials (GENERAL)

- **Chemical Analysis**
  Qualitative, quantitative, and analytical chemistry; chromatography; chemical composition.
- **Chemical Processes and Engineering**
  Chemical processes and specific chemical reactions such as oxidation, nitration, hydrogenation, polymerization, etc.
- **Luminescence**
  Chemiluminscence; photoluminescence; bioluminescence; phosphorescence; electroluminescence; fluorescence; optical properties.
- **Photochemistry**
  Photosynethesis, photolysis, photodecomposition, and photodissociation; photochemical reactions; radiation chemistry.

Price Codes/
Subject Categories

24 Composite Materials

- **Reinforced Materials and Fibers**
  Materials reinforced by inclusions; fiber reinforcement; whiskers; filament wound vessels; properties and uses.
- **Composite Materials**
  Types of composite materials including laminates, honeycomb cores, cermets, prepegs, and sandwich and matrix materials; properties and uses.

25 Inorganic and Physical Chemistry

- **Corrosion**
  Metal corrosion; stress corrosion; corrosion prevention; tests for corrosion.
- **Metal Crystals**
  Structure, defects, and technology and metal crystals.
- **Coatings**
  Types of coatings; properties and uses; coating techniques.

- **Electrochemistry**
  Electrochemical processes; electrolysis; electrocatalysts; electrolytic processes; reaction kinetics.

26 Metallic Materials

- **Aluminum**
  Aluminum; aluminum alloys; aluminum compounds; powdered aluminum; properties and uses.
- **Beryllium**
  Beryllium; beryllium alloys; beryllium compounds; properties and uses.
- **Liquid Metals**
  Types of liquid metals; properties and uses.
- **Steel**
  Types of steels and steel alloys; properties and uses.
- **Titanium**
  Titanium; titanium alloys; titanium compounds; properties and uses.
- **Refractory Metals**
  Refractory metals; refractory alloys; superalloys; properties and uses.
- **Metallurgy**
  Powder metallurgy; sintering; fractography; metallography.

27 Nonmetallic Materials

- **Plastics**
  Types of plastics; properties and uses.
- **Adhesives**
  Types of adhesives; properties and uses.
- **Ceramics**
  Types of ceramics; properties and uses.
- **Elastomers**
  Types of elastomers; properties and uses.
- **Graphite**
  Graphite; pyrolytic graphite; graphite composites; properties and uses.
- **Polymers**
  Types of polymers; polymer chemistry and polymer physics; properties and uses.

Price Codes/
Subject Categories

28 Propellants and Fuels

- **Liquid Propellants**
  Types of liquid propellants; storability, handling, and manufacture; properties and uses.
- **Solid Propellants**
  Types of solid propellants; properties and uses; manufacture; combustion efficiency and stability; storage and handling; propellant grain studies; oxidizers and igniters used with solid propellants.

29 Materials Processing

Space-based development of products and processes for commerical application.

Engineering

Includes engineering (general); communications and radar; electronics and electrical engineering; fluid mechanics and heat transfer; instrumentation and photography; lasers and masers; mechanical engineering; quality assurance and reliability; structural mechanics.

Price Codes/
Subject Categories

31 Engineering (GENERAL)

Vacuum technology; control engineering; display engineering; cryogenics; and fire prevention.

32 Communications and Radar

- **Communication Satellites**
  Domestic and foreign communications satellites.
- **Communication Equipment**
  Communication equipment including radio, microwave, infrared, light, laser, television, and fiber optic equipment.
- **Communication Systems**
  Types of communication systems including television, digital, fiber optic, etc., and specific systems; Defense Communication Systems; Deep Space Network; Local Area Networks, etc.
- **Telemetry**
  Data transmission and measuring; biotelemetry; telephotometry; telepsychometry.
- **Radio Noise**
  Noise spectra; intensity, reduction, and measurement of radio noise sources; amplitude distribution analysis.
- **Communication Theory**
  Information theory; coding automata theory; signal processing; decision theory; probability theory.

33 Electronics and Electrical Engineering

- **Radar Equipment**
  Types of radar and implementation; equipment specifications; systems engineering.
- **Semiconductors and Transistors**
  Types of semiconductors and transistors; devices, materials, and applications.
- **Antennas**
  Types of radar and radio antennas; properties, design, and applications.
- **Electronic Components**
  Types of electronic components; design, properties, packaging, and manufacturing; component reliability; equipment tests.
- **Circuitry**
  Circuit theory, production techniques; reliability; protection; applications.
- **Electrical Equipment**
  Types of electrical equipment; design, properties, and uses; test and reliability.
- **Amplifiers**
  Types of electronic amplifiers; design, properties, and applications.
- **Feedback and Control Theory**
  Systems, techniques, and designs.
- **Electromagnetic Radiation**
  Electromagnetic wave propagation; radiation effects; properties, detection, and applications.
- **Microelectronics**
  Microcircuits; microelectronic devices and components; microminiaturized electronic devices; microinstrumentation.
- **Microwave and Submillimeter Wave Technology**
  Microwave research; properties; measuring techniques; applications.
- **Magnetism**
  Theory and research; aeromagnetism; electromagnetism; ferromagnetism; hydromagnetism; paramagnetism; thermomagnetism.

34 Fluid Mechanics and Heat Transfer

- **Boundary Layer Technology**
  Flow characteristics and mechanics; boundary layer control; combustion control; separation; transition and turbulence; mathematical models; wind tunnel tests.

- **Gas Dynamics**
  Applied and theoretical gas dynamics; problem solving; hypersonic and rarefied gas dynamics; gas dynamic lasers.
- **Fluidics**
  Fluid amplification; fluid logic circuits; fluid devices; fluid mechanics.
- **Fluid Flow**
  Types of liquid flow excluding gas and air flow; properties; measuring instruments; fluid mechanics.
- **Combustion Physics**
  Combustion phenomena; kinetics; instability; detonation; theory.
- **Heat Transfer, Basic**
  Types of heat transfer, heat dissipation; and heat resistance; measuring devices; thermodynamic properties.
- **Reentry Heat Transfer**
  Heat transfer problems on reentry and their solutions; hyperbolic reentry; hypersonic reentry.
- **Thermal Protection**
  Materials used in thermal insulation; thermal control coatings; temperature control; materials tests.
- **Ablation**
  Ablation studies; ablating materials; application to reentry vehicles; rocket nozzles; ablative nose cones.
- **Cryogenics**
  Low temperature research; cryogenic fluids and equipment; cryochemistry.

Price Codes/
Subject Categories

35 Instrumentation and Photography

- **Photography**
  Methods of photography; cameras and photographic equipment; applications and uses.
- **Infrared Technology**
  Radiation measuring devices; infrared instruments; applications and methodologies.
- **Instrument Standards and Calibration Techniques**
  Calibration standards for measuring instruments; techniques; test equipment.
- **Temperature Measurement**
  Heat and temperature measuring devices; applications; systems.
- **Pressure Measurement**
  Pressure measuring devices; applications; systems.

- **Display Systems**
  Cathode ray tubes and display devices; display techniques and principles; helmet mounted displays; head-up displays.
- **Data Recording**
  Data recorders and recording systems and techniques; laser-holographic data recording systems.
- **Gas Flow Measurement**
  Devices, applications, and systems for measuring gas flow including optical measuring instruments; laser measurement techniques.

36 Lasers and Masers

- **Lasers and Masers**
  References to lasers and masers in general; laser theory; types of lasers and masers.
- **Laser Applications**
  Design, types, and uses; materials; optical properties.

37 Mechanical Engineering

- **Bearings and Gears**
  Types of bearings and gears; uses and applications; materials; product development; mechanical properties.
- **Lubrication and Lubricants**
  Lubrication materials; systems; applications; high temperature; solid lubricants; squeeze films.
- **Machining**
  Machining techniques and processes; machine tools; automation and production engineering.
- **Friction and Wear**
  Types, measurement, and effects of friction and wear; frictionless environment; mechanical and surface properties.
- **Seals**
  Sealants; gaskets; packing; leakage; self-sealing materials; sealing techniques including O-ring and labyrinth seals.
- **Welding**
  Types of brazing, bonding, and soldering; techniques and processes; weld properties.
- **Metal Forming**
  Forming techniques and processes; metal working; malleability.
- **Pumps**
  Types of pumps; design and uses; performance tests; equipment specifications.

- **Vacuum Technology**
  Vacuum systems, techniques, and processes; vacuum testing, measurement, and material fabrication; application to space commercialization.
- **Nondestructive Testing**
  Types of techniques; materials tests; automatic test equipment.
- **Turbomachinery**
  Types of turbomachinery; design and uses; equipment specifications; performance tests; aerodynamic characteristics.

38 Quality Assurance and Reliability

- **Quality Control and Reliability**
  Product development; qualitative testing; analysis of materials and structures; reliability criteria for components and structures.

39 Structural Mechanics

Price Codes/
Subject Categories

- **Shells**
  Shell structures; stresses; loads; buckling and vibration.
- **Stresses and Loads**
  Stresses and loads on launch vehicles, spacecraft, and aerospace structures.
- **Structure Vibration and Damping**
  Vibration and damping in aerospace structures, spacecraft, and airframes; panel flutter.
- **Impact Phenomena**
  Studies of impact phenomena in aerospace structures and components; micrometeoroid impact damage.
- **Structural Fatigue**
  Fatigue studies and analysis; techniques for aerospace structures and components.
- **Sandwich Construction**
  Honeycomb, multilayer, and laminated fabrication; techniques and structures.
- **Stress Analysis**
  Stress calculation; analysis of structures.
- **Structural Tests and Reliability**
  Destructive and nondestructive testing and reliability of aerospace structures, spacecraft, airframes, and large space structures.

Geosciences

Includes geosciences (general); earth resources and remote sensing; energy production and conversion; environment pollution; geophysics; meteorology and climatology; and oceanography.

42 Geosciences (GENERAL)

Collection and evaluation of data concerning the Earth and its global systems obtained through airborne and spaceborne scientific observations and measurements.

43 Earth Resources and Remote Sensing

- **Earth Resources**
  Earth resources studies; the role of satellites in natural resource development, geology, agriculture, and forestry.
- **Geodesy and Cartography**
  Geodetic positions; satellite surveying; geodetic applications; mapping techniques; analyzing methods; mapping systems.

Price Codes/
Subject Categories

44 Earth Production and Conversion

- **Energy Resources**
  Production, conversion, transmission, conservation of energy; solar energy conversion; wind power; remote survey of energy resources; hydrogen economy.
- **Fuel Cells and Chemical Batteries**
  Types of fuel cells and chemical batteries; properties and uses; energy storage; chemical auxiliary power units; electrochemistry.
- **Solar Space Power**
  Solar power technology; conversion and efficiency; solar dynamic power systems; auxiliary power sources.
- **Nuclear Auxiliary Power**
  Nuclear auxiliary reactors; isotopic space power; specific SNAP systems.

45 Environmental Pollution

- **Environmental Pollution Control**
  Control applications of aerospace techniques including remote sensing, to all aspects of air, water, thermal, and environmental pollution; specific pollutants; noise; noise injuries; noise meters; atmospheric composition; water quality.

46 Geophysics

- **Upper Earth Atmosphere**
  Earth atmosphere above the troposphere; ionospheric composition, phenomena, chemical reactions, and satellite measurement.
- **Geology and Seismology**
  Earth geology, petrography, and orography; earthquake detection; measuring and recording instruments; theoretical models.
- **Geomagnetism**
  Geomagnetic anomaly, fields, latitudes, pulsations, and storms; measuring and data transmitting instruments.

47 Meteorology and Climatology

- **Meteorological Satellites**
  Meteosat; NOAA; Nimbus; Tiros; meteorological data from satellites.
- **Weather Forecasting**
  Methods and instruments of weather data acquisition and processing; theory and methods of weather prediction.
- **Micrometeorology**
  Smallest scale observation of physical and dynamic occurences within the surface boundary layer of the atmosphere including turbulence, air pollution, and launch conditions.
- **Cloud Research**
  Types of cloud formation; cloud physics; nephanalysis; cloud seeding.
- **Meteorological Instruments**
  Types of meteorological instruments; uses and specifications; measuring and recording instruments; meteorological parameters.

48 Oceanography

- **Water Resources and Oceanography**
  Water conservation and development; hydrology; remote sensing of floods; snow cover, ice, oceanography; other hydrosphere studies.

Price Codes/
Subject Categories

Life Sciences

Includes life sciences (general); aerospace medicine; behavioral sciences; man/system technology and life support; and space biology.

51 Life Sciences (GENERAL)

- **Biology (Generals)**
  Microbiology; ecology; botany; genetics; cytology.

- **Biochemistry**
  Study of chemical substances in living organisms; physiochemistry; biological and chemical evolution; experimentation.

52 Aerospace Medicine

- **Aerospace Medicine**
  Aerospace medical problems and studies, e.g., toxicity and weightlessness; medical aspects of astronaut performance reaction; neurophysiology.
- **Clinical Medicine**
  General medicine; body systems and functions; diseases; drugs.
- **Physiological Factors**
  Functions related to body composition, physical performance reaction; neurophysiology.
- **Biological Radiation Effects**
  Effects of radiation on human beings, animals, and plants; physiological tests; radiation theraphy; health physics.

Price Codes/
Subject Categories

53 Behavioral Sciences

- **Psychological Factors**
  Psychological aspects of human behavior; psychiatry; psychophysiology; group dynamics; flight crews; tests.

54 Man/System Technology and Life Support

- **Life Support Systems**
  Life survival equipment and support systems used in spacecraft environments and habitats; space flight feeding; sanitation and waste disposal; closed ecological systems.
- **Crew Safety and Protective Clothing**
  Survival techniques for flight crews; escape and rescue operations; safety devices; space suits and protective clothing; emergency lift sustaining systems.
- **Human Engineering**
  Design and engineering of devices, equipment, and artificial environments to the requirements of man.
- **Man-Machine Systems**
  Interrelated technologies and systems of man and machine; man-computer interface; automata theory; systems engineering.
- **Bioinstrumentation**
  Instrumentation for measuring and recording biological parameters; biomedical data; medical electronics; bioengineering.

- **Robotics**
  Development and demonstration of automatically controlled devices that can perform humanlike functions including decision making.

55 Space Biology

- **Extraterrestrial Life**
  Exobiology and detection; simulation; genesis of life outside Earth.

Mathematical and Computer Sciences

Includes mathematical and computer sciences (general); computer operations and hardware; computer programming and software; computer systems; cybernetics; numerical analysis; statistics and probability; systems analysis; and theoretical mathematics.

59 Mathematical and Computer Sciences (GENERAL)

Price Codes/
Subject Categories

- **Applied Mathematics**
  Mathematical applications in physical, biological, and aerospace sciences.
- **Data Processing**
  Automatic processing of data; data handling, conversion, correlation, transfer, and compression; retrieval and storage; batch processing; processing terminals and equipment; data management.

60 Computer Operations and Hardware

- **Digital and Analog Computers**
  Computer hardware; structure; peripheral equipment; applications; hybrid computers.
- **Airborne or Spaceborne Computers**
  Computer design for onboard spacecraft or aircraft flight control; automatic flight and landing control.

61 Computer Programming and Software

- **Computer Software**
  Computer and language programming; computer systems programs; software tools; software engineering.
- **CAD/CAM**
  Application of technical advances in computers to engineering design, analysis, and production in the aerospace industry.

62 Computer Systems

Computer networks and special application computer systems.

63 Cybernetics

- **Cybernetics and Bionics**
  Methods of control and communications common to living organisms and machines; those systems that function in the manner of or resembling human systems.
- **Artificial Intelligence**
  Development of algorithms sensors, actuators, software, and systems for expanding automation to task planning, decision making, generation of computer codes, multiple system coordination, monitoring and diagnosing systems and subsystems.

64 Numerical Analysis

- **Numerical Analysis**
  Approximation techniques; mathematical analysis and theory; applications of mathematics; mathematical models.

65 Statistics and Probability

- **Probability and Statistics**
  Statistical techniques and applications; probability and reliability theory; probability equations, problem solving.

66 System Analysis

Mathematical modeling; network analysis; and operations research.

67 Theoretical Mathematics

Topology and number theory.

Physics

Includes physics (general); acoustics; atomic and molecular physics; nuclear and high-energy physics; optics; plasma physics; solid-state physics; and thermodynamics and statistical physics.

70 Physics (GENERAL)

Properties, elementary principles; and laws that relate to the physical world; fundamentals of acoustic; optic, electric, magnetic, mechanic, thermal, radiative, atomic structure, or nuclear phenomena; interactions of matter and energy states.

71 Acoustics

- **Acoustics**
  Acoustic attenuation; simulation; scattering radiation and vibration; hydroacoustics.

- **Ultrasonics**
  Science of ultrasonic sound waves; nondestructive testing; clinical medicine; acoustic properties; materials research.

72 Atomic and Molecular Physics

- **Atomic Physics**
  Atomic theory, collision, beams, energy, reactions, and properties.
- **Molecular Physics**
  Molecular theory, energy, structure, collision, and beams; molecules; properties and instrumentation.

73 Nuclear and High-Energy Physics

- **Nuclear Physics**
  Nuclear particles, structure, reactions, and force.
- **Radioactivity**
  Radiation measurement, hazards, and effects; high energy interactions; nuclear medicine; radiochemistry.

Price Codes/
Subject Categories

74 Optics

- **Optics**
  Optical equipment and technology; electron optics; crystal optics; fiber optics; optical properties.
- **Light**
  Light scattering; measurement effects and transmission.

75 Plasma Physics

- **Plasma Applications**
  Plasma arc welding; plasma spraying; plasma power sources; plasma jet technology.
- **Plasma Dynamics**
  Plasma-particle and electromagnetic interactions; space plasma; laser applications; transport properties.
- **Magnetohydrodynamics**
  Magnetohydrodynamic theory and applications.

76 Solid-State Physics

- **Solid State Devices**
  Devices using solid state components, diodes, and rectifiers.
- **Superconductivity**
  Superconductivity; superconducting magnets; superconducting transition temperatures; critical temperatures; critical field curves of superconducting material.

- **Dielectrics**
  Dielectric material including dielectric constant of materials; electric losses and ohmic resistance of compounds; permeability and polarization of dielectric substances and media.

- **Epitaxial Deposition**
  Film deposition techniques and applications; semiconductor devices; substrates; electrical properties.

77 Thermodynamics and Statistical Physics

Quantum mechanics; theoretical physics; and Bose and Fermi statistics.

Social Sciences

Includes social sciences (general); administration and management; documentation and information science; economics and cost analysis; law, political science and space policy; and urban technology and transportation.

Price Codes/
Subject Categories

80 Social Sciences (GENERAL)

- **Educational matters.**
  81 Administration and Management

- **Aerospace Management**
  Management techniques; cost control; production engineering; personnel management.

82 Documentation and Information Science

- **Information Technology**
  Documentation; information processing and retrieval; information systems; integrated library systems; technology utilization; information management.

83 Economics and Cost Analysis

Cost effectiveness studies.

84 Law, Political Science and Space Policy

- **World Space Programs and Aerospace Law**
  NASA programs in general; foreign aerospace programs; international cooperation; law related to space and aeronautics; Congressional aerospace hearings.

- **Space Commercialization**
  Policies, incentives, and techniques for commercial ventures in space by private industry.

85 Urban Technology and Transportation

- **Urban Technology and Transportation**
  Application of aerospace technology to the problems of cities; urban development, planning, research, and transportation; rail transportation; rapidtransit systems; police services; water and sewage treatment; waste utilization; air, water, and noise pollution; pollution control; land use.

Space Sciences

Includes space sciences (general); astronomy; astrophysics; lunar and planetary exploration; solar physics; and space radiation.

88 Space Sciences (GENERAL)

Extraterrestrial intelligence, movement, and communication; and general scientific studies of galaxies and the universe.

Price Codes/
Subject Categories

89 Astronomy

- **Solar Astronomy**
  Solar activity; solar physics; solar telescopes; and observatories.
- **Stellar Astronomy and Cosmology**
  Stellar and galactic astronomy including radio astronomy; origin and evolution of the universe.
- **Meteors and Meteorites**
  Meteor properties and hazards; micrometeoroids and micrometeorites; comets; interplanteary dust.

90 Astrophysics

- **Gravitation**
  Gravitational theory, effect, and fields; equations and potential; antigravity; gravitational collapse; gravity gradient control of satellites; geophysical gravitational fields.
- **Astrophysical Plasmas**
  Space plasmas; solar; cosmic, stellar, and interstellar plasmas; solar and stellar atmospheres.

91 Lunar and Planetary Exploration

- **The Moon**
  Lunar atmosphere; topography; environment; lunar exploration; lunar spacecraft and roving vehicles; surface properties.
- **Planetary Sciences and Exploration**
  Planetary composition, surfaces, atmospheres, and environment; spacecraft and vehicles used in planetary exploration.

92 Solar Physics

Solar activity, solar flares, solar radiation and sunspots.

93 Space Radiation

- **Cosmic Radiation**
  Primary and secondary cosmic radiation; galactic and stellar radiation.
- **Solar Radiation and Activity**
  Solar radiation; observation and instrumentation; hazards to space flight; protection from solar radiation; solar storms; solar flares; solar winds; sunspots.
- **Radiation Belts**
  Inner and outer radiation belts; Van Allen Belt; artificial radiation belts; geomagnetically trapped particles; proton belts; trapped radiation.

Price Codes/
Subject Categories

General

99 General

Includes aeronautical, astronautical, and space science related histories, biographies, and pertient reports too broad for categorization; histories or broad overviews of NASA programs.

Stylistic Elements

Updated Information

- April 10, 1998
  A section was added for "Electronic Document Reference Citations."

Stylistic Elements of Report

These sections describe stylistic elements of tables, figures, appendixes, equations, references, and copyrighted material. Following these guidelines will help to convey the information in a report concisely and consistently. If your paper receives professional editing and formatting services from the staff of the Data Analysis & Imaging Branch, following these guidelines will help to reduce the processing time. If you have questions or need more information contact Gail McQuigg.

Tables

Tables are numbered in order of their mention with Arabic numerals (table 1, table 2(a), or table 2(b)).Table titles should be brief and appear above the table. All major words of the title should be capitalized, such as in the following:

Table 1. Basic Model Geometry

Table 2. Average Atomic Number and Density of Materials

The following is the title for the second and succeeding pages of a multiple page table:

Table 1. Continued

The following is the title for the last page of a multiple page table:

Table 1. Concluded

Table subtitles, headnotes, boxheads, footnotes, and entries consisting of words, phrases, or sentences should not be bold face and are capitalized following sentence style. That is, the first letter of the first word is capitalized; however, they do not end with a period.

Figures

Figures are numbered in order of their mention (figure 1, figure 2, or figure 3(a)). Small figures (sketches) included in the text may be unnumbered. If necessary, sketches may be designated A, B, or C, in order of their appearance. If figures are grouped together and placed at the back of a report, more than one figure can be placed on a page. If more than one figure appears on a page, be sure to place figures so that the spacing between figures is even.

Figure captions should be very brief and follow sentence style, that is, the first letter of the first word is capitalized and the caption ends with a period, such as in the following:

Figure 1. Blocking arrangement and grid dimensions.

Figure 1. Three-view sketch of the research aircraft. Dimensions are in inches.

Figure 1. Computing scheme for algorithm.

The following is the caption for the second and succeeding pages of a multiple page figure:

Figure 1. Continued.

The following is the caption for the final page of a multiple page figure:

Figure 1. Concluded.

Information about creating electonic files for figures can be found at "Guidelines for Electronic Graphics."

Equations

Equations are numbered in parentheses as (1), (2), (3a), (3b) in the text and (A1), (A2), (B1a), (B1b) in appendixes, in order of appearance. The equation number appears to the right of the equation and is flush with the right margin. An equation is referred to in the plural if it has more than one part.

Appendixes

Appendixes are designated A, B, C in order of mention in the main text. A single appendix does not need a letter designation. Appendixes have titles which appear on the line following the heading "Appendix" as follows:

Appendix A
Determination of Chordwise Spacing of Holes

Appendix
Transformation Equations

Paper Document Reference Citations

Publications referred to in NASA reports are listed in the "References" section, which is located immediately after the concluding section of the report or, if the report has appendixes, after the last appendix. References are numbered in the order of mention in the text, tables, and figures. If a bibliography is presented in addition to or in place of the reference section, the publications in it are not numbered, but are listed alphabetically according to author.

- Only documents that the author has actually seen may be referenced.
- When surveying the literature for source material, the author should check the availability of the material. Material that is not obtainable must NOT be referenced.
- Classified or restricted distribution documents, such as ITAR, may be referenced as background references. If data are taken from any restricted document, written permission to reference the document must be obtained from the office controlling the report. Proprietary documents may not be refer-

enced unless absolutely necessary. If proprietary documents must be referenced written approval of the citation the way it is to be cited must be obtained from the company owning the proprietary data.

- Reference to unpublished work or information acquired through personal communication must be clearly identified as such and must not be represented as published information, even if publication is pending. This identification should be included in a parenthetical note in the text with an appropriate notation such as "unpublished," "to be published," or "personal communication." Under no circumstances should an author represent another's work as his or her own.

Correct citation of a reference is an important responsibility of the author. The final draft of the report should be carefully checked to make certain there are no errors in the reference list. Each reference should contain the following information in the order given:

1. Surname, first name or initials of all authors as given on the reference. If anonymous, the listing begins with the title.
2. Exact title as given.
3. Exact subtitle as given. If on separate line from main title, separate by a period.
4. Source information.
   (a) For a book give volume number, edition, publisher, and place of publication if publisher is not well known.
   (b) For a periodical give name of periodical, volume, number, month, year, and inclusive pages. If title of periodical has changed, give correct title for issue cited.
   (c) For reports from organizations (e.g., NASA, NSF) give organization report number and year. If the name of the organization is not part of the report number, the name of the organization follows the report number.
5. Date (use copyright date if no other date appears).
6. Page numbers (optional for book; inclusive page numbers required for periodical). Examples of typical reference forms follow:

Books

One edition

Johnson, Leonard G.: *The Statistical Treatment of Fatigue Experiments.* Elsevier Publ. Co., 1964.

Revised edition

Brewster, Ray Q.; and McEwen, W. E.: *Organic Chemistry.* Second ed., Prentice Hall, Inc., 1959.

One volume of series

Bowden, F. P.; and Tabor, D.: *The Friction and Lubrication of Solids.* Part II, Clarendon Press (London), 1964.

Foreign language book

Flügge, W.: *Statik und Dynamik der Schalen.* (Statics and Dynamics of Shells.) Julius Springer (Berlin), 1934.

Translation

Jost, Wilhelm (Huber O.Croft, transl.): *Explosion and Combustion Processes in Gases.* McGraw-Hill Book Co., Inc., 1945.

Edited book

Smithells, Colin J., ed.: *Metals Reference Book.* Vol. III, Fourth ed., Plenum Press, 1967.

Section of edited collection

Wiederhorn, S.: Effects of Environment on the Fracture of Glass. *Environment-Sensitive Mechanical Behavior*, A. R. C. Westwood and N. S. Stoloff, eds., Gordon & Breach Sci. Publ., Inc., 1966, pp. 293-317.

Section of book

Sasser, James H.: Photographic Summary of Apollo 11 Mission. *Apollo 11 Preliminary Science Report*, NASA SP-214, 1969, pp. 9-33.

Stylistic Elements

Book compiled by staff

Battelle Memorial Institute: *Prevention of the Failure of Metals Under Repeated Stress.* John Wiley & Sons, Inc., 1941.

Book of anonymous authorship

SAE Handbook. Soc. Automat. Eng., Inc., 1949.

Periodicals

Foreign language

De Haller, P.: Das Verhalten von Tragflügelgittern in Axialverdichtern und in Windkanal (The Behaviour of Airfoil Grids in Axial Compressors and in a Wind Tunnel). *Brennstoff-Wärme-Kraft,* Bd. 5, Heft 10, Oct. 1953, pp. 333-336.

English language

Parker, R. J.; and Zaretsky, F. V.: Rolling Element Fatigue Lives of Through-Hardened Bearing Materials. *J. Lub. Tech.*, vol. 94, no. 2, 1972, pp. 165-173.

NASA and NACA Publications

Technical Report (NASA)

Miller, C. D.: *Simultaneous Correction of Velocity and Mass Bias in Photography of Meteors.* NASA TR R-280, 1968.

Technical Report (NACA)

Tucker, Warren A.: *A Method for the Design of Sweptback Wings Warped To Produce Specified Flight Characteristics at Supersonic Speeds.* NACA Rep. 1226, 1955. (Supersedes NACA RM L51508.)

Technical Note

Spalvins, Talivaldis; and Brainard, William A.: *Effect of Surface Topography on Structural Growth of Thick Sputtered Films.* NASA TN D-7577, 1974.

Technical Memorandum

Costakis, William G.: *Analog Computer Implementation of Four Instantaneous Distortion Indices.* NASA TM X-2993, 1974.

Contractor Report

Rohatgi, Upendra; and Reshotko, Eli: *Laminar Flow Between Stationary and Rotating Disks With Inflow.* NASA CR-2356, 1974.

Special Publication

Gunter, Edgar J., Jr.: *Dynamic Stability of Rotor-Bearing Systems.* NASA SP-113, 1966.

Stylistic Elements

Conference Publication

McDougal, David S., ed.: *FIRE Cirrus Science Results 1993.* NASA CP-3238, 1993.

Article from Conference Publication

Martner, Brooks E.; and Kropfli, Robert A.: Observations of Multi-Layered Clouds Using K-Band Radar. *FIRE Cirrus Science Results 1993*, NASA CP-3238, 1993, pp. 75-82.

Thesis

Krebs, Charles V.: Determination of Stress Concentration Factors for Hyperbolically Notched Tension Members. M.S. Thesis, Univ. of Notre Dame, 1950.

Conference Proceedings

Edited conference proceedings

Clementel, E.; and Villi, C., eds.: *Conference on Direct Interactions and Nuclear Reaction Mechanisms*. Gordon & Breach Sci. Publ., Inc., 1963.

Paper from conference proceedings

Gilbert, William P.; and Gatlin, Donald H.: Review of the NASA High-Alpha Technology Program. *High-Angle-of-Attack Technology,* Volume I, Joseph R. Chambers, William P. Gilbert, and Luat T. Nguyen, eds., NASA CP-3149, Part I, 1992, pp. 23-59.

Patent

Endrey, Andrew Laszlo: Aromatic Polyimides From Meta-Phenylene Diamine and Para-Phenylene Diamine. U.S. Patent 3, 179, 633, Apr. 1965.

Restricted Distribution Publication

Stevens, J. R.: A New Lifting Surface Approach: The Design of Supersonic Wings. *Design Conference Proceedings-Technology for Supersonic Cruise Military Aircraft,* Volume I, AFFDL-TR-77-85-VOL I, U.S. Air Force, 1976. (Available from DTIC as AD B025 253L.)

For assistance with verifying, formatting, and preparing reference citations, please contact Cathy Everett.

Electronic Document Reference Citations

Authors must save the electronic document that is used as a reference either on paper or disk to preserve a copy of the document as referenced and to guard against the document becoming unavailable.

These citations should conform as closely as possible in content and punctuation to the style of citations for paper references. Citations of electronic references should include the author, title of the article and title of the main article if applicable, date of document, paragraph numbers if applicable, internet address, and date of accession. Electronic addresses should, of course, include all colons, slashes, dots, and other marks of punctuation as given, while care should be taken so that punctuation marks that are not part of the electronic address be mistakenly included in the electronic address.

If it becomes necessary to break an electronic address at the end of a line a hyphen should not be used because this could create confusion. It is recommended that electronic addresses be broken after slashes, dots, or colons, but not after hyphens as this could again create confusion. Also to avoid confusion, two blank spaces should be used before and after electronic addresses in reference citations.

Informal documents such as personal e-mail and information from discussion groups should be avoided as references. Such documents are generally difficult to access, not thoroughly researched, and not presented as scholarly information. If this information must be referenced, it should be treated similar to informal private communication and be acknowledged by a parenthetical statement.

The following references are cited in the suggested style.

Monographs

Walker, Janice R.: *MLA-Style Citations of Electronic Sources*, Vers. 1.1, Rev. Aug. 1996. http://www.cas.usf.edu/english/walker/ mla.html Accessed June 30, 1997.

Xia, Li; and Crane, Nancy: *Electronic Sources: MLA Style of Citation. Bibliographic Formats for Citing Electronic Information*, Updated July 26, 1996. http://www.uvm.edu/~ncrane/estyles/mla.html Accessed July 2, 1997.

Harnack, Andrew; and Kleppinger, Gene: Beyond the *MLA Handbook: Documenting Electronic Sources on the Internet*, Rev. Nov. 25, 1996. http://falcon.eku.edu/honors/beyond-mla/#contents Accessed July 1, 1997.

Page, Melvin E.: *A Brief Citation Guide for Internet Sources in History and the Humanities*, Vers. 2.1, Feb. 20, 1996. http://h-net2. msu.edu/~africa/citation.html Accessed June 30, 1997.

Arnzen, Michael A.: *Cyber Citations, Documenting Internet sources presents some thorny problems*. http://www.internetworld.com/1996/09/ cybercitations.html Accessed June 30, 1997.

Articles Within Documents

Quinion, Michael B.: Citing online sources, Advice on online citations formats. *World Wide Words*, June 21, 1996. http://www. quinion.demon.co.uk/words/citation.htm Accessed June 30, 1997.

Ivey, Keith C.: Untangling the Web, Handling Internet Addresses in Text, last modified Mar. 24, 1997. *The Editorial Eye* online. http://www.eeicom.com/eye/utw/96jan.html Accessed July 2, 1997.

Ivey, Keith C.: Untangling the Web, Citing Internet Sources, last modified Mar. 24, 1997. *The Editorial Eye* online. http://www.eeicom. com/eye/utw/96aug.html Accessed July 3, 1997.

Articles Within Series

Electronic Sources: MLA Style Of Citation. *Footnotes and Bibliography Series*. Lehigh University Libraries. http://www.lib. lehigh.edu/footnote/xlia.html Accessed June 30, 1997.

Page, Melvin E.: Turabian-Style, Chicago Manual of Style Citation Guide for History and the Humanities. *Footnotes and Bibliography Series.* Lehigh University Libraries. http://www.lib.lehigh.edu/ footnote/turabn.html Accessed June 30, 1997.

Electronic Article Based on Printed Book

Guide for Citing Electronic Information, based on *Electronic Style: A Guide for Citing Electronic Information*, by Li, X. & Crane, N. (1993). Westport: Meckler, Prepared by K. Wagner, Aug. 1995. Sarah Byrd Askew Library, William Paterson College of New Jersey. http://www. wilpaterso.edu/wpcpages/library/citing.htm Accessed June 30, 1997.

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Producing An Electronic Document

The following sections describe how to produce an electronic document. Following these guidelines will help your document to be produced efficiently.

Updated Information

- April 10, 1998
  The Report Documentation Page now includes block by block instructions on how to fill out the form.

Guidelines for Electronic Graphics

Electronic publishing software cannot recognize multiple-page graphics documents. Therefore, each page of graphics must have its own electronic file. For best printing and viewing quality of graphics, use no less than 0.5 line weights and no less than 30 percent black fill patterns. Use no less than 9 point Times, Helvetica, or Symbol fonts. Use of other fonts may result in PostScript file errors, printing problems, and make the document unreadable when it is placed on microfiche by CASI. When creating electronic images, use no less than 200 dots per inch (dpi).

Saving and Exporting Graphics Files

The following sections describe how to produce and export an electronic file in the format required for printing and electronic dissemination. Following these guidelines will help to reduce the processing time for your document.

Macintosh

Adobe Illustrator 3.2.3 and 5.0
: Save file as Black & White Macintosh or Color Macintosh.

Adobe Illustrator 6.0
: Save files as Illustrator EPS D 8 bit Macintosh D 6.0.

Adobe Photoshop (all versions)
: Save files as PICT, TIFF, or EPS. (If using EPS, be sure to choose ASCII format and do not include halftone screen or transfer function.)

MacDraw Pro
: Save file as EPSF or PICT.

Claris Draw
: Save file as EPSF or PICT.

Canvas
: Save file as EPSF or PICT.

Cricket Graph III
: Save file as EPSF or PICT.

Cricket Draw III
: Export file as EPSF or PICT.

KaleidaGraph
: Export file as MacDraw PICT (High Resolution PICT).

ClarisCad
: Save file as EPSF or PICT.

In some cases, graphics may be copied from the graphics application (MacDraw Pro, Claris Draw, Claris Cad, and sometimes Photoshop) and pasted into electronic publishing applications.

Unix

Adobe Illustrator
: Save file as EPS D 8 bit.

Adobe Photoshop
: Save files as PICT, TIFF, or, EPS. (If using EPS, be sure to choose ASCII format and do not include halftone screen or transfer function.)

TecPlot
: Save files as EPS.

DAS
: Print files to PostScript file, FTP to Macintosh computer as ASCII, convert file using Adobe Illustrator 6.0, save as "Illustrator EPS D 8 bit Macintosh D 6.0". (If document is on Unix, FTP to Unix as ASCII for inclusion in document.)

IslandDraw
: Save file as EPSI.

DOS

Corel Draw
: Export file as EPS. (Export text as curves. Export with no header.)

In some cases, graphics may be copied from Corel Draw and pasted into electronic publishing applications.

If you have questions about producing electronic graphics, please call Dee Bullock.

Preparing Reports With FrameMaker 5.0.1 Templates

Four FrameMaker templates are necessary to format a report: a cover template, a title page template, a text template, and a Report Documentation Page template. A template is also provided for a table of contents. These templates can be downloaded by going to the "Templates" section. An explanation of the tags for each template can be found by returning to the "Preparing Reports With FrameMaker Contents". In addition, please be aware that

- FrameMaker will space appropriately between words and sentences.
- FrameMaker files that contain graphics files should be no longer than 50 pages. Otherwise, it has been our experience that, the document becomes too slow and cumbersome to work with.
- For a report with multiple files for text, tables, and figures the second and subsequent files must be numbered consecutively rather than each file beginning with page 1. For more advanced users, the pagination can be controlled in the book file setup prior to creating a Postscript file.

Cover Template

A cover page template is required for all reports. The cover page contains the report number, title, authors, authors' affiliations, and date. To use the cover templates, place the cursor and type or move throughout the page with the arrow keys. DO NOT press return to move from one place to the next. An ITAR restriction notice has been set up as conditional text. Pull down the menu under **Special** and choose **Conditional Text**. Click on **Show/Hide**, double click on the required restriction notice to move it to the show box, and choose **Set**. The tags to format text for the cover template can be found by bringing up the Paragraph Catalog. To see a labeled sample of the tags for the cover template go to the "Samples" section. The cover templates can be downloaded by going to the "Templates" section.

Title Page Template

A title page template is required for all reports. The title page contains the report number, title, authors, authors' affiliations, date, and NASA Center indentification. To use the title page templates, place the cursor and type or move throughout the page with the arrow keys. DO NOT press return to move from one place to the next. An ITAR restriction notice has been set up as conditional text. Pull down the menu under **Special** and choose **Conditional Text**. Click on **Show/Hide**, double click on the required restriction notice to move it to the show box, and choose **Set**. The tags to format text for the title page template can be found by bringing up the Paragraph Catalog. To see a labeled sample of the tags for the title page template go to the "Samples" section. The title page templates can be downloaded by going to the "Templates" section.

Table of Contents Template

To use the table of contents template, first generate a table of contents of the text file. Cut and paste the generated list into the table of contents template. Add tabs between the heading titles and the page numbers so that the page numbers align on the right margin. Tag the heading titles with the appropriate heading level tag. The tags to format text for the table of contents template can be found by bringing up the Paragraph Catalog. To see a labeled sample of the tags for the table of contents template go to the "Samples" section. The table of contents template can be downloaded by going to the "Templates" section.

One Column and Two Column Templates

A one column or two column template is required for all reports. To use the one column or two column template, insert the cursor in the template and begin typing the document. The tags to format text for the one column or two column template can be found by bringing up the Paragraph Catalog. To see a labeled sample of the tags for the one column or two column template go to the "Samples" section. The one column or two column templates can be downloaded by going to the "Templates" section.

Tables in FrameMaker Documents

The style of the elements of a table are discussed in the "Stylistic Elements of Report" section. Some basic formatting rules to remember when creating tables are

- Use a line thickness of Thin for lines in and around tables.
- The title of a table cannot be wider than the table itself.
- No text within a table or its title is bold.
- Tables are done in 10 point font with 12 point leading (spacing).

Figures in FrameMaker Documents

Figures and captions are placed within a table format. This format maintains appropriate spacing between figures and captions, and ensures that figures and captions will flow together when changes are made in the text. Figure captions are typed one blank line after the figure and are centered within the width of the figure. The stylistic elements of figures and captions are discussed in the "Stylistic Elements of Report" section. FrameMaker can import figure files saved as PS, EPS, PICT, GIF, or TIFF files. When importing a TIFF or GIF file, the dpi at which the figure was scanned must be known. For information about saving electronic graphic files see "Guidelines for Electronic Graphics."

Figures After Text. Figures grouped together and placed at the end of a document are centered vertically and horizontally. More than one figure can be placed on a page; however, there must be an equal amount of white space between each figure. To place figures after the text of a document, anchor a table

on a blank line by pulling down the menu at Table and choosing Insert Table. Choose either 42pc Figure for those figures that span the entire page or 42pc Figure(Land) for those figures that need to be placed landscape.

- To use 42pc Figure:
  - Place cursor in the top box of the table, pull down the menu at **File**, and select **Import/File**.
  - Choose the appropriate file, choose **Import by Reference**, and choose **Import**.
  - When file appears on the screen, there will be small black handles around the figure. Pull down the menu at **Special** and select **Anchored Frame**.
  - Change the anchoring position to **At Top of Column** and choose **Edit Frame**.
  - Grab the handle at the top of the figure and pull the box down to the top edge of the figure. Grab the handle at the bottom of the figure and pull the box up to the bottom edge of the figure.
  - Place cursor in the bottom box of the table, type figure caption, and use the appropriate format tag.
  - To center table on page vertically, place cursor in the table, pull down the menu at **Table** and choose **Table Designer** to adjust spacing above the table.

- To use 42pc Figure(Land):
  - Place cursor in the left box of the table, pull down the menu at **Table**, choose **Row Format**, change the **maximum height limit** to 55 picas, and choose **Set**.
  - With cursor in the left box of the table, pull down the menu at **File** choose **Import/File**, select the appropriate file, choose **Import by Reference**, and choose **Import**.
  - When file appears on the screen, small black handles will surround the figure. Grab the handle on the left side of the figure and pull the box to the left edge of the figure. Grab the handle on the right side of the figure and pull the box to the right an additional 0.5 picas. As the box size is being increased, the number of picas will be visible in the lower left corner.
  - Place cursor in the right box of the table and pull down the menu at **Graphics** choose **Rotate**, select the  , and choose **Rotate**.
  - Type figure caption and use appropriate format tag.
  - To adjust the widths of table columns to fit the figure and legend, pull down the menu at **Table** and choose **Resize Columns**. To center table on page vertically, place cursor in the table, pull down the menu at **Table** and choose **Table Designer** to adjust the spacing above the table.

Figures Integrated in Text. For figures integrated in the text, anchor a table on the line above where the table will be placed. From the **Table** pull down menu choose **Insert Table**.

- For figures that are within a single column of a two column document use the table format **20pc Figure**.
- For figures that span the entire page of a two column document use the table format **42pc Figure**.
- For figures that are placed landscape on the page, use the table format **42pc Figure(Land)**.
- For figures that span the entire page of a one column document use the table format **38pc Figure**.

Report Documentation Page Template

A Report Documentation Page (RDP) template is required for all reports. To use the RDP templates place the cursor in the first box of the form. Press Return or Enter to move from one box to the next. Boxes that contain information that rarely changes will be skipped. Should any information in these boxes need to be changed, place the cursor directly in the box and make the appropriate changes. The tags to format text for the RDP template can be found by bringing up the Paragraph Catalog. To see a labeled sample of the tags for the RDP template go to the "Samples" section. The RDP templates can be downloaded by going to the "Templates" section.

Block 2—Report date should reflect date and year on cover and title pages.

Block 3—Report type should reflect NASA Report Series (i.e., Technical Publication, Technical Memorandum, Conference Publication, Contractor Report, Special Publication, or Technical Translation).

Block 4—Report Title

Block 5—Funding Number should reflect the RTOP in which the work was funded under. The abbreviation "WU" (for work unit) should precede the number (i.e., WU 521-12-11-03)

Block 6—Authors

Block 7—Performing Organization is normally NASA Langley Research Center. If the report is a Contractor Report, the Contractors Name and Address should appear in the block.

Block 8—Performing Organization Report Number is the L-number or tracking number assigned to the report. If the report is a Contractor Report, the Contractors tracking number should appear in the block.

Block 9—Sponsoring/Monitoring Agency is normally NASA, Washington, DC. If the report is a Contractor Report, NASA Langley Research Center, Hampton, VA 23681-2199 should be used.

Block 10—Sponsoring/Monitoring Agency Report Number should be the NASA/XX-1998-XXXXXX report number used on the cover and title pages.

Block 12a—Distribution/Availability should reflect the classification of the report (Unclassified-Unlimited), the Subject Category, the Distribution, and Availability: NASA CASI. For Distribution choose **Standard** or **Nonstandard** distribution. **Standard Distribution** will be to distribution of approximately 150-200 U.S./Foreign Companies/Universities worldwide with an interest in the subject. **Nonstandard Distribution** will be distribution to NASA Libraries and distribution indicated by the author only. Click here for a table of suggested distribution for the Scientific and Technical Information (STI) report series.

Block 13—Abstract

Block 14—Subject Terms or keywords are required.

Block 15—Number of pages (include cover(2) + title(2) + report pages + Report Documentation Page(1) = Number of pages

Block 16—Price Code

Producing An Electronic Document

Tags in Paragraph Catalog of Cover Template (cover.fm)

*10-28-97 Last Update
Tag at the top of paragraph catalog that indicates when template file was last updated.

*InsideCover-Body
Tag to set up inside cover information.

*InsideCover-Bullet
Tag to set up inside cover information.

*InsideCover-Title
Tag to set up inside cover information.

*RestrictionNotice
Tag to set up restriction notice, which is conditional text.

Affiliation
Tag for authors' professional address.

Author
Tag for authors' names.

Date
Tag for report date.

ReportNo-CP
Tag for CP report number.

ReportNo-CR
Tag for CR report number.

ReportNo-TM
Tag for TM report number.

ReportNo-TP
Tag for TP report number.

Subtitle
Tag for report subtitle.

Title
Tag for report title.

*These tags are present as a necessary part of creating the template. They are not for use in formatting the table of contents.

Tags in Paragraph Catalog of Cover Template (cover_army.fm)

*10-28-97 Last Update
: Tag at the top of paragraph catalog that indicates when template file was last updated.

*InsideCover-Body
: Tag to set up inside cover information.

*InsideCover-Bullet
: Tag to set up inside cover information.

*InsideCover-Title
: Tag to set up inside cover information.

*RestrictionNotice
: Tag to set up restriction notice, which is conditional text.

Affiliation
: Tag for authors' professional address.

Author
: Tag for authors' names.

Date
: Tag for report date.

ReportNo-Army
: Tag for Army report number.

ReportNo-TM
: Tag for TM report number.

ReportNo-TP
: Tag for TP report number.

Subtitle
: Tag for report subtitle.

Title
: Tag for report title.

---

*These tags are present as a necessary part of creating the template. They are not for use in formatting the table of contents.

Tags in Paragraph Catalog of Title Page Template (title.fm)

*10-28-97 Last Update
Tag at the top of paragraph catalog that indicates when template file was last updated.

*AvailabilityInformation
Tag to set up availability information lines.

*NASAAddress
Tag to set up NASA Address.

*RestrictionNotice
Tag to set up restriction notice, which is conditional text.

AcknowledgmentsHeading
Tag for acknowledgment heading.

AcknowledgmentsText
Tag for acknowledgment text.

Affiliation
Tag for authors' professional address.

Author
Tag for authors' names.

Date
Tag for report date.

ReportNo-TM
Tag for TM report number.

ReportNo-TP
Tag for TP report number.

Subtitle
Tag for report subtitle.

Title
Tag for report title.

Trademarks
Tag for trademarks disclaimer.

*These tags are present as a necessary part of creating the template. They are not for use in formatting the table of contents.

Tags in Paragraph Catalog of Title Page Template (title_cr.fm)

*10-28-97 Last Update
Tag at the top of paragraph catalog that indicates when template file was last updated.

*AvailabilityInformation
Tag to set up availability information lines.

*NASAAddress
Tag to set up NASA Address.

*RestrictionNotice
Tag to set up restriction notice, which is conditional text.

AcknowledgmentsHeading
Tag for acknowledgment heading.

AcknowledgmentsText
Tag for acknowledgment text.

Affiliation
Tag for authors' professional address.

Author
Tag for authors' names.

CR-InfoLine
Tag for contract information.

Date
Tag for report date.

ReportNo-CR
Tag for CR report number.

Subtitle
Tag for report subtitle.

Title
Tag for report title.

Trademarks
Tag for trademarks disclaimer.

---

*These tags are present as a necessary part of creating the template. They are not for use in formatting the table of contents.

Tags in Paragraph Catalog of Title Page Template (title_cp.fm)

*10-28-97 Last Update
Tag at the top of paragraph catalog that indicates when template file was last updated.

*AvailabilityInformation
Tag to set up availability information lines.

*NASAAddress
Tag to set up NASA Address.

*RestrictionNotice
Tag to set up restriction notice, which is conditional text.

AcknowledgmentsHeading
Tag for acknowledgment heading.

AcknowledgmentsText
Tag for acknowledgment text.

Affiliation
Tag for authors' professional address.

Author
Tag for authors' names.

CP-InfoLine
Tag for conference information.

Date
Tag for report date.

ReportNo-CP
Tag for CP report number.

Subtitle
Tag for report subtitle.

Title
Tag for report title.

Trademarks
Tag for trademarks disclaimer.

*These tags are present as a necessary part of creating the template. They are not for use in formatting the table of contents.

Tags in Paragraph Catalog of Title Page Template (title_cp_itar.fm)

*10-28-97 Last Update
: Tag at the top of paragraph catalog that indicates when template file was last updated.

*AvailabilityInformation
: Tag to set up availability information lines.

*NASAAddress
: Tag to set up NASA Address.

*RestrictionNotice
: Tag to set up restriction notice, which is conditional text.

AcknowledgmentsHeading
: Tag for acknowledgment heading.

AcknowledgmentsText
: Tag for acknowledgment text.

Affiliation
: Tag for authors' professional address.

Author
: Tag for authors' names.

CP-InfoLine
: Tag for conference information.

Date
: Tag for report date.

ReportNo-CP
: Tag for CP report number.

Subtitle
: Tag for report subtitle.

Title
: Tag for report title.

Trademarks
: Tag for trademarks disclaimer.

---

*These tags are present as a necessary part of creating the template. They are not for use in formatting the table of contents.

Tags in Paragraph Catalog of Title Page Template (title_army.fm)

*10-28-97 Last Update
Tag at the top of paragraph catalog that indicates when template file was last updated.

*AvailabilityInformation
Tag to set up availability information lines.

*NASAAddress
Tag to set up NASA Address.

*RestrictionNotice
Tag to set up restriction notice, which is conditional text.

AcknowledgmentsHeading
Tag for acknowledgment heading.

AcknowledgmentsText
Tag for acknowledgment text.

Affiliation
Tag for authors' professional address.

Author
Tag for authors' names.

Date
Tag for report date.

ReportNo-Army
Tag for Army report number.

ReportNo-TM
Tag for TM report number.

ReportNo-TP
Tag for TP report number.

Subtitle
Tag for report subtitle.

Title
Tag for report title.

Trademarks
Tag for trademarks disclaimer.

*These tags are present as a necessary part of creating the template. They are not for use in formatting the table of contents.

Tags in Paragraph Catalog of Table of Contents Template (toc.fm)

*12-2-97 Last Update
: Tag at the top of paragraph catalog that indicates when template file was last updated.

*PageNumber
: Tag to set up page number format on the master page to automatically number the document.

1Head
: Tag for first level heading.

1HeadTOC
: Tag for each first level heading in table of contents.

2HeadTOC
: Tag for each second level heading in table of contents.

3HeadTOC
: Tag for each third level heading in table of contents.

4HeadTOC
: Tag for each fourth level heading in table of contents.

AppendixHeadTOC
: Tag for each appendix heading in table of contents, which is followed by a 1HeadTOC entry for the appendix title.

*These tags are present as a necessary part of creating the template. They are not for use in formatting the table of contents.

Tags in Paragraph Catalog of One Column and Two Column Templates (1col.fm and 2col.fm)

*2-26-98 Last Update
: Tag at the top of paragraph catalog that indicates when template file was last updated.

*PageNumber
: Tag to set up page number format on the master page to automatically number the document.

1Head
: Tag for first level heading.

2Head
: Tag for second level heading.

3Head
: Tag for third level heading.

4Head
: Tag for fourth level heading.

5Head
: Tag for fifth level heading.

AbstractHead
: Tag for the abstract heading.

AbstractText
: Tag for the abstract text.

Body
: Tag for any indented body paragraph.

BodyNoIndent
: Tag for any nonindented body paragraph.

Bullet
: Tag for any nonindented bulleted paragraph.

BulletIndented
: Tag for any indented bulleted paragraph.

Equation
: Tag for a displayed equation that will not be numbered.

Equationw/#
: Tag for a displayed equation that will be numbered.

Figleg
: Tag for figure legends that are more than one line.

---

*These tags are present as a necessary part of creating the template. They are not for use in formatting the table of contents.

FiglegCntr
: Tag for figure legends that are one line only.

Footnote
: Tag to set up the footnote format, which takes effect when footnote is added to document.

Listw/#
: Tag for a numbered paragraph that will be indented like a body paragraph.

Listw/#Hanging
: Tag for a numbered paragraph that will be indented like a body paragraph. Text will wrap around and hang to the right of the paragraph number.

PhotoSource
: Tag for a photograph L number placed with a photograph.

Refs
: Tag for a reference list that is not numbered. Text will wrap around and hang indented slightly to the right of the left margin.

Refsw/#
: Tag for a reference list that is numbered. Text will wrap around and hang to the right of the paragraph number.

Symboltable
: Tag for a symbol table. The tab may need to be adjusted according to the width of largest symbol.

TableFootnote
: Tag for a table footnote.

TableText
: Tag for a table text. Alignment may need to be adjusted according to how the table is being set up.

TableTitle
: Tag for a table title.

Tags in Paragraph Catalog of RDP Templates (rdp.fm, rdp_cr.fm, rdp_jrp.fm, and rdp_vtc.fm)

*3-11-97 Last Update
: Tag at the top of paragraph catalog that indicates when template file was last updated.

*Body
: Tag to setup text that labels boxes on form.

Centered-Fill-in-Blanks
: Tag to fill out all blocks except blocks 15 and 16 on the RDP form.

Fill-in-Blanks
: Tag to fill out blocks 15 and 16 only on the RDP form.

*These tags are present as a necessary part of creating the template. They are not for use in formatting the table of contents.

Preparing Reports With Microsoft Word v6.0.1 Templates for Macintosh

Four Microsoft Word templates are necessary to format a report. You will need to download a Cover, Title page, Text, and Report Documentation Page (RDP) Template.

Cover Templates:
TP, TM, CR, or CP covers (except for Army publications)
Army cover

Title Page Templates:
TP or TM title pages
Contractor Report title page
Conference Publication title page
Conference Publication title page with ITAR restriction notice
Army title page

Text Templates:
One column format
Two column format

RDP Templates:
RDP for TP, TM, or CP
RDP for Contractor Report
RDP for Vehicle Technology Center
RDP for Joint Research Program Office

These templates can be used two ways: (1) import text from another file, remove blank lines between text, extra spaces, and tabs and then apply the correct style to each section; or (2) prepare a manuscript in this template by first creating text with no blank lines and then applying the styles.

The following steps explain how to download and use the Microsoft Word templates. The templates are in BinHex format and Stuffit Expander will be needed to uncompress and download the templates. If you need Stuffit Expander 4.0.1, please click here to download.

- Click the appropriate template, which will then automatically uncompress and download the template onto the desktop.
- Move the template into the Templates folder in the Microsoft Word folder on the hard drive.
- Select File New.
- The template will appear in the dialog box.
- Select the appropriate template and click OK.
- The template will appear in the Microsoft Word document.

Note that when Equation Editor 2.0 is used with Microsoft Word 6.0 , problems with the file have historically occurred. Please use Microsoft 6.0.1 with Equation Editor 2.0 to avoid these problems. An upgrade may be ordered free of cost from Microsoft.

Cover and Title Page Templates

These instructions are for using the cover and title page templates for NASA reports. A cover page and a title page are required for all reports. The cover page contains the report number, title, authors, author's affiliation and date. The title page contains the report number, title, authors, author's affiliation, and date, and the NASA Center indentification. The following are specific details to guide you through these templates.

The first page of the cover template consists of the cover and the second page consists of STI Program information. Both pages must be printed. The title page template consists of two pages: the title page and the back title page (CASI and NTIS information). Both pages are needed in the report.

There are seven templates available for report cover and title pages.

Cover Templates
TP, TM, CR, or CP covers (except for Army publications)
Army cover

Title Page Templates
TP or TM title pages
Contractor Report title page
Conference Publication title page
Conference Publication title page with ITAR restriction notice
Army title page

All styles have been set in this template. To make changes to the text, highlight the text only and start typing in the new text. (If text is highlighted, the delete key need not be used.)

To insert the date for the cover, select **View** and a pull-down menu will appear. Select **Headers and Footers**. Scroll down to the footer and highlight the date. Type in the new month and year. Choose View and Header and Footers to deselect the Headers and Footers option and resume page layout style.

If a template is not lised in the New dialog box, make sure the template is stored where the software can find it. The software looks for templates in the locations specified for User Templates and Workgroup Templates on the File Locations tab of the Options dialog box (Tools menu).

ITAR statement, trademark, and acknowledgement notices can be obtained from the notices file. The ITAR notice when applicable, should be placed on both the cover and title pages. Trademark and acknowledgement statements when applicable, should be placed on the second page of the title page template in the

invisible frames provided. Insertion frames are provided on the cover and title page templates for the notices. Make sure the **Show/Hide button** is on so that the invisible frames are visible. Open the notices file and highlight the notice. Select **Edit** then **Copy**. Click on the insertion frame on the cover or title page template, then select **Edit** and **Paste**.

All styles associated with these templates can be found on the ruler bar at the top of the screen. Click on the arrow next to the Styles box and a pull-down menu will appear. To activate a style, highlight the style and release the mouse. Click here to see the paragraph styles used with these templates.

The default styles are automatically set and should not be deleted, renamed, or removed from this template. Making changes to these styles can change the document format.

To see cover samples click here.

One Column and Two Column Templates

Use the one column template One column format or two column template Two column format to format the text of your document. Click to see the paragraph styles used with these templates.

To see one and two column samples click here.

Tables in Microsoft Word Documents

Please note that no tags have been created for Table Designer because each table is usually unique. The style of the elements of a table is discussed in the section entitled "Tables". Some basic formatting rules to remember when creating tables are

- Use a line thickness of 3/4 point for lines in and around tables.
- The title of a table cannot be wider than the table itself.
- No text within a table or its title is bold.
- For tables integrated in text, leave two lines blank between the text and the title of the table and the text and the bottom of the table.
- Tables are done in 10 point font with 12 point leading (spacing).

Figures in Microsoft Word Documents

To import an entire graphic file, choose **Picture** from the **Insert menu**. Microsoft Word can import EPS, PICT, TIFF, and other graphics files. Figures can be integrated within the text or placed at the end of the document. The stylistic elements of figures and captions are discussed in the section entitled "Figures." Figure captions are typed one blank line after the figure and are centered within the width of the figure.

Figures After Text. Figures grouped together and placed at the end of a document are centered vertically and horizontally on the page. When figures are placed at the end of the document, more than one figure can be placed on a page. However, there must be an equal amount of white space between the figures.

Figures Integrated in Text. Figures can be placed at the top, the bottom, or center of a page. For a two column document, figures can be sized to fit one column or can span both columns. When figures span two columns, insert a section break by choosing **Insert** from the menu at the top of the screen. Highlight **Break** and choose **Continuous**. Import a figure by choosing **Picture** from the **Insert** menu. Be sure to put a section break after the figure caption to ensure the text that follows will be in the two column format. Leave two blank lines between the text and the top of a figure and between the figure caption and the text.

Report Documentation Page Template

All styles have been set for this template. Simply type the appropriate information in the box. There are four RDP templates.

RDP Templates:
RDP for TP, TM, or CP
RDP for Contractor Report
RDP for Vehicle Technology Center
RDP for Joint Research Program Office

To see RDP samples click here

Tab to or click in the appropriate boxes and type in the information requested. Certain boxes are not accessible and cannot be modified. Shaded boxes represent boxes for information entry.

Block 2—Report date should reflect date and year on cover and title pages.

Block 3—Report type should reflect NASA Report Series (i.e., Technical Publication, Technical Memorandum, Conference Publication, Contractor Report, Special Publication, or Technical Translation).

Block 4—Report Title

Block 5—Funding Number should reflect the RTOP in which the work was funded under. The abbreviation "WU" (for work unit) should precede the number (i.e., WU 521-12-11-03)

Block 6—Authors

Block 7—Performing Organization is normally NASA Langley Research Center. If the report is a Contractor Report, the Contractors Name and Address should appear in the block.

Block 8—Performing Organization Report Number is the L-number or tracking number assigned to the report. If the report is a Contractor Report, the Contractors tracking number should appear in the block.

Block 9—Sponsoring/Monitoring Agency is normally NASA, Washington, DC. If the report is a Contractor Report, NASA Langley Research Center, Hampton, VA 23681-2199 should be used.

Block 10—Sponsoring/Monitoring Agency Report Number should be the NASA/XX-1998-XXXXXX report number used on the cover and title pages.

Block 12a—Distribution/Availability should reflect the classification of the report (Unclassified-Unlimited), the Subject Category, the Distribution, and Availability: NASA CASI. For Distribution choose **Standard** or **Nonstandard** distribution. **Standard Distribution** will be to distribution of approximately 150-200 U.S./Foreign Companies/Universities worldwide with an interest in the subject. **Nonstandard Distribution** will be distribution to NASA Libraries and distribution indicated by the author only. Click here for a table of suggested distribution for the Scientific and Technical Information (STI) report series.

Block 13—Abstract

Block 14—Subject Terms or keywords are required.

Block 15—Number of pages (include cover(2) + title(2) + report pages + Report Documentation Page(1) = Number of pages

Producing An Electronic Document

Block 16—Price Code

Styles for the Cover and Title Page Templates

Author
: Style used for the author's name.

Affiliation
: Style used for the author's affiliation.

Date
: Style used for date.

ReportNo
: Style used for the report number.

Title
: Style used for the report title.

Subtitle
: Style used for the report subtitle.

Styles for the One Column and Two Column Templates

1Head
Tag for first level heading.

2Head
Tag for second level heading.

3Head
Tag for third level heading.

4Head
Tag for fourth level heading.

5Head
Tag for fifth level heading.

AbstractHead
Tag for the abstract heading.

AbstractText
Tag for the abstract text.

Body
Tag for any indented body paragraph.

BodyNoIndent
Tag for any nonindented body paragraph.

Bullet
Tag for any nonindented bulleted paragraph.

BulletIndented
Tag for any indented bulleted paragraph.

Equation
Tag for a displayed equation that will not be numbered.

Equationw/#
Tag for a displayed equation that will be numbered.

Figleg
Tag for figure legends that are more than one line.

FiglegCntr
Tag for figure legends that are one line only.

Footnote
Tag to set up the footnote format, which takes effect when footnote is added to document.

Listw/#
Tag for a numbered paragraph that will be indented like a body paragraph.

Listw/#Hanging

Tag for a numbered paragraph that will be indented like a body paragraph. Text will wrap around and hang to the right of the paragraph number.

PhotoSource

Tag for a photograph L number placed with a photograph.

Refs

Tag for a reference list that is not numbered. Text will wrap around and hang indented slightly to the right of the left margin.

Refsw/#

Tag for a reference list that is numbered. Text will wrap around and hang to the right of the paragraph number.

Symboltable

Tag for a symbol table. The tab may need to be adjusted according to the width of largest symbol.

TableFootnote

Tag for a table footnote.

TableText

Tag for a table text. Alignment may need to be adjusted according to how the table is being set up.

TableTitle

Tag for a table title.

Preparing Reports With Microsoft Word 97 for PC

Preparing Reports With Microsoft Word 97 Templates for PC

Four Microsoft Word templates are necessary to format a report. You will need to download a Cover, Title page, Text, and Report Documentation Page (RDP) Template.

Cover Templates:
TP, TM, CR, or CP covers (except for Army publications)
Army cover

Title Page Templates:
TP or TM title pages
Contractor Report title page
Conference Publication title page
Conference Publication title page with ITAR restriction
Army title page

Text Templates:
One column format
Two column format

RDP Templates:
RDP for TP, TM, or CP
RDP for Contractor Report
RDP for Vehicle Technology Center
RDP for Joint Research Program Office

These templates can be used two ways: (1) import text from another file, remove blank lines between text, extra spaces, and tabs and then apply the correct style to each section; or (2) prepare a manuscript in this template by first creating text with no blank lines and then applying the styles.

The following steps explain how to download and use the Microsoft Word templates:

- Click the appropriate template, which will then automatically download.
- Copy the template into the Templates directory in the Microsoft Word program directory on the hard drive.
- Select File New.
- The template will appear in the dialog box.
- Select the appropriate template and click OK.
- The template will appear in the Microsoft Word document.

Cover and Title Page Templates

These instructions are for using the cover and title page templates for NASA reports. A cover page and a title page are required for all reports. The cover page

contains the report number, title, authors, authors affiliation, and date. The title page contains the report number, title, authors, the authors' affiliations, and the NASA Center identification. The following are specific details to guide you through these templates.

The first page of the cover template consists of the cover and the second page consists of STI Program information. Both pages must be printed. The title page template consists of two pages: the title page and the back title page (CASI and NTIS information). Both pages are needed in the report.

There are seven templates available for report cover and title pages.

Cover Templates
TP, TM, CR, or CP covers (except for Army publications)
Army cover

Title Page Templates
TP or TM title pages
Contractor Report title page
Conference Publication title page
Conference Publication title page with ITAR restriction.
Army title page

All styles have been set in this template. To make changes to the text, highlight the text only and start typing in the new text. (If text is highlighted, the delete key need not be used.)

To insert the date for the cover, select View and a pull-down menu will appear. Highlight Headers and Footers. Scroll down to the footer and highlight the date. Type in the new month and year. Choose View and Header and Footers to deselect the Headers and Footers option and resume page layout style.

If a template is not lised in the New dialog box, make sure the template is stored where the software can find it. The software looks for templates in the locations specified for User Templates and Workgroup Templates on the File Locations tab of the Options dialog box (Tools menu).

ITAR statement, trademark, and acknowledgement notices can be obtained from the notices file. The ITAR notice when applicable, should be placed on both the cover and title pages. Trademark and acknowledgement statements when applicable, should be placed on the second page of the title page template in the invisible frames provided. Insertion frames are provided on the cover and title page templates for the notices. Make sure the Show/Hide button is on so that the invisible frames are visible. Open the notices file and highlight the notice. Select Edit then Copy. Click on the insertion frame on the cover or title page template, then select Edit and Paste.

All styles associated with these templates can be found on the ruler bar at the top of the screen. Click on the arrow next to the Styles box and a pull-down menu

will appear. To activate a style, highlight the style and release the mouse. Click here to see the paragraph styles used with these templates.

The default styles are automatically set and should not be deleted, renamed, or removed from this template. Making changes to these styles can change the document format.

To see cover samples click here.

One Column and Two Column Templates

Use the one column template One column format or two column template Two column format to format the text of your document. Click to see the paragraph styles used with these templates. To see a sample of a formatted document choose one of the following:

To see one and two column samples click here.

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TableFootnote

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Tag for a table text. Alignment may need to be adjusted according to how the table is being set up.

TableTitle

Tag for a table title.

Creating PostScript Files

Creating a PostScript File with FrameMaker v5.0.1

To submit a document for printing, at least four PostScript files must be created. The cover, the title page, the text, and the Report Documentation Page (RDP) must each be saved to separate PostScript files.

Creating PostScript File for Cover, Title Page, Report Documentation Page, or Text (text in one file)

- **Open** the appropriate file.
- Pull down the menu under **File** and choose **Print**.
- Select to print **All pages**.
- Deselect **Last Sheet First**.
- Select **Print Only to File.**
- **Give the file a name with eight characters or less followed by a .ps extension.**

Printing a PostScript file can be time consuming. If you are on a Unix system, you can ensure that your PostScript file has completed printing, use a shell tool that has been set to the same directory to which the PostScript file was printed. At the prompt type *head filename.ps* (replace filename with the name of file) and press return. When the file has completed printing, information that begins with "%!PS Adobe 3.0" will be displalyed.

After the PostScript file has been created, it is highly recommended that the PostScript file be viewed with an appropriate program (such as Image Tool) to ensure that the file is correct. If the file needs to be corrected, open the FrameMaker file, make the appropriate changes, and start the process of printing the PostScript file again.

Creating PostScript File for Text (text in more than one file)

To prepare a PostScript file for a document with more than one text file, a book file must be created. It is essential that the Report Documentation Page (RDP) fall on an even numbered page. If the last file before the RDP ends on an even numbered page, then a blank page must be added at the end of that file.

- **Open** the first text file.
- Pull down the menu under **File** and choose **Generate Book**.
- Choose **New Multifile Book** and then click on the **Generate** button.
- A book box will now appear.
- **Close** the first text file.
- In the book box, pull down the menu under **File** and choose **Add File**. Select the next text file to appear in the paper. Click on **Add**. Continue adding files

until all files have been added and appear in the book box in the correct order. When all files have been added choose **Done**.

- Highlight the first file listed in the book box. Pull down the menu under **File** and choose **Set Up File**. For **Starting Page Side** select **Next Available Side**. For **Page Numbering** select **Restart at 1** for first text file. For all other files select **Read From File**. Choose **Set**. Repeat these steps for each file.
- In the book box, pull down the menu under **File** and choose **Generate Update**. Click on **Update**. If an error message appears, choose **Skip All Remaining Messages** and then choose **Continue**. However, if the error message is Unresolved Cross References or Missing Graphic Files, these errors must be corrected before continuing.
- Choose **Save As** and name the book file.
- In the book box, pull down the menu under **File** and click on **Print**.
- Deselect **Last Sheet First**.
- Select **Print Only to File** and **give the file a name of eight characters or less followed by a .ps extension**.
- Choose **Print**. If an error message appears, choose **Skip All Remaining Messages** and then choose **Continue**. However, if the error message is Unresolved Cross References or Missing Graphic Files, these errors must be corrected before continuing.

Printing a PostScript file can be time consuming. If you are on a Unix system, you can ensure that your PostScript file has completed printing, use a shell tool that has been set to the same directory to which the PostScript file was printed. At the prompt type head filename.ps (replace filename with the name of file) and press return. When the file has completed printing, information that begins with "%!PS Adobe 3.0" will be displalyed.

After the PostScript file has been created, it is highly recommended that the PostScript file be viewed with an appropriate program (such as Image Tool) to ensure that the file is correct. If the file needs to be corrected, open the FrameMaker file, make the appropriate changes, and start the process of printing the PostScript file again.

Creating a PostScript File with Microsoft Word v6.0.1 for Macintosh

To create usable PostScript files for Microsoft Word 6.0.1 documents, follow these basic instructions.

Note. Use Apple LaserWriter 8 driver and Apple LaserWriter II NTX printer description file.

- Choose **File** and **Print** from the pull down menu.
- Select **Pages All** from window.
- Select **Destination File**.
- Choose **Save**
- **Name document with the .ps extension (i.e., lastname.ps) File names should not include spaces and can be no longer than 8 characters before the .ps extension.**
- Choose **Format PostScript Job**.
- Choose **ASCII**.
- Choose **Level 2 only**.
- Choose **Font Inclusion All**.
- Choose **Save**.

Creating a PostScript File with Microsoft Word 97 for PC

To create usable PostScript files for Microsoft Word 97 documents, follow these instructions for setting up Properties

- Select **Settings** then **Printer**.
- Select **Apple LaserWriter II NTX** or **equivalent PostScript printer**.
- Select **File** then choose **Properties**.
- Select the **Details tab**.
- At **Print to the following port list**, select **File** (creates a file on disk).
- At **Print** using the following driver, choose **Apple Laserwriter II NTX** or **equivalent PostScript printer**.
- Choose **Apply**.
- Select **PostScript tab**.
- At **PostScript output format**, select **PostScript (optimize for portability-ADSC)**.
- Select **Download header with each print job**.
- Select the **Advanced button**.
- Select **Use PostScript Level 1 features**.
- Select **No bitmap compression**.
- Select **ASCII data**.
- Choose **OK**.
- Select the **Fonts tab**.
- Choose **Send TrueType fonts to printer according to the font Substitution table**.
- Select **Send Fonts As button**.
- At **Send TrueType fonts as**, select **Outlines**.
- At **Threshold to switch**, select **2**.
- At **Send PostScript fonts as**, select **In Native Format**.
- Choose **OK**.

When ready to generate a PostScript file from Microsoft Word

- Choose **File** then **Print** from the menu.
- At **Name** select **Apple LaserWriter II NTX** or **equivalent PostScript printer**.
- Select **Print to file**.

- **Choose a name for the document. The document will end with the .prn extension (i.e., lastname.prn). File names should not include spaces and can be no longer than 8 characters before the .prn extension.**
- Choose **OK**.

Templates

Downloaded these from http://larcpubs.larc.nasa.gov/guidelines/

- FrameMaker v5.0.1
- Microsoft Word v6.0.1 for Macintosh
- Microsoft Word 97 for PC
- Microsoft Word 6.0/Windows 95 for PC (COMING SOON)
- LaTeX—*Courtesy of the Aerothermodynamics Branch, AGDD. (Not supported by DAIB.)*

For instructions on using the templates to prepare your document, please see one of the sections below:

- Preparing Reports With FrameMaker v5.0.1
- Preparing Reports With Microsoft Word v6.0.1 for Macintosh
- Preparing Reports With Microsoft Word 97 for PC

Updated Information

- April 10, 1998
  Templates for all formats were updated to include style formats currently being approved by the STI Templates Committee.

  Cover and title page templates were updated to reflect the recent change of address for CASI.

  The blank page and page with the black line on cover templates have been deleted. The cover templates now consist of only 2 pages (the cover and the STI Profile Sheet).

  Link to LaTeX templates courtesy of the Aerothermodynamics Branch, AGDD was added. These templates are provided for your convenience but not supported by DAIB.

Samples

Go to http://larcpubs.larc.nasa.gov/ to view these samples.

The samples provided here are for layout purposes only.
They are NOT accurate publicized information.

- Covers
- Title Pages
- Table of Contents
- Text
- Report Documentation Pages
- Published Reports
  - NASA/TP-1998-206290 PS
  - NASA/TP-1998-206290 PDF
  - NASA/TM-1998-206282 PS
  - NASA/TM-1998-206282 PDF

Guidelines for Author Preparation of NASA Reports
Feedback Form

Your comments about the electronic version of the Guidelines for Author Preparation of NASA Reports will help us provide better service in the future. To fill out this form online, you will need "forms" support (e.g., Mosaic 2.0 or better). If you would prefer, you can fill out the form below and send it to Susan Stewart, Langley Research Center, MS 196, Hampton, VA 23681-2199.

Name: _____

EMail: _____

Organization: _____

Comments: _____

Feedback Form

Information Management Branch
and
Data Analysis and Imaging Branch

Publication Services

Visit this site at http://larcpubs.larc.nasa.gov/

IMB & DAIB
Publication Services